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Spathe thinly membranous, deeply 2-lobed, the lobes much longer than the fruit . . . . . 3. *O.? tenera.*

1. **O. alismoides,** *Pers. Syn. Pl.* i. 400. Leaves on long petioles dilated and tufted at the bottom of the water, the lamina submerged or floating, orbicular-cordate and about 6 in. diameter in the Australian specimens, varying in Indian ones to broadly ovate. Peduncles usually long. Spathe ovoid-oblong, nearly 1½ in. long, shortly 2-lobed at the top, and bearing 5 or 6 longitudinal herbaceous wings, 2 or 3 of them 1 to 2 lines broad, the others usually narrower. Ovary and fruit about the length of the spathe. Outer perianth-segments green, oblong-lanceolate, 4 to 5 lines long; inner ones white, veined, under 1 in. diameter. Stamens 6 to 9.—L. C. Rich. in Mem. Inst. Fr. 1811, t. 7; *Stratiotes alismoides,* Linn. Spec. 754; *Damasonium indicum,* Willd. Sp. Pl. ii. 276; Roxb. Corom. Pl. t. 185; Bot. Mag. t. 1201.

N. Australia. Roper river, *F. Mueller;* Creeks in the neighbourhood of Rockhampton, *Bowman, O'Shanesy, Watson;* Kennedy district, *Daintree.*—The species is widely dispersed over East India.

2. **O. ovalifolia,** *L.C. Rich. in Mem. Inst. Fr.* 1811, 78. Habit of *O. alismoides,* but the leaf-lamina ovate or oblong, 2 to 4 in. long when perfect, obtuse, rounded at the base and not at all or scarcely cordate. Peduncles sometimes very short sometimes above 1 ft. long, varying probably according to the depth of the water. Spathe almost coriaceous, about 1½ in. long, either quite smooth or with 2 or 3 slightly prominent, longitudinal nerves, but not winged in any of the specimens seen. Outer perianth-segments green, ¾ to 1 in. long; inner ones pale yellow 1½ to 2 in. diameter in the only specimens in which they are perfect. Stamens 9 to 15.—*Damasonium ovalifolium,* R. Br. Prod. 344; *D. cygnorum,* Planch. in Ann. Sc. Nat. ser. 3, xi. 82.

N. Australia. Albert river, *Henne.*
Queensland. Rockhampton, *Bowman, Thozet;* Mount Elliott, *Fitzalan.*
N. S. Wales. Port Jackson, *R. Brown;* Penrith, *Backhouse;* north of Lachlan river, *A. Cunningham;* Clarence river, *Wilcox.*
Victoria. Glenelg or Wendu river, *Robertson;* Yarra river, *Adamson, F. Mueller;* Lake Alexandria, *F. Mueller.*
W. Australia. Swan river, *Drummond, 1st coll.*

3. **O.? tenera,** *Benth.* Leaf-lamina ovate or oblong as in *O. ovalifolia,* but smaller, and the whole plant much more slender. Spathe thinly membranous, rarely above 1 in. long, deeply divided into 2 lobes which project much beyond the capsule, forming an oblique double lanceolate point. Capsule thin and narrow, the seeds rather large, oblong, the placentas scarcely protruding into the cavity, the fruit bearing at the end some withered remains of the perianth, but I have been unable to find flowers in any of our specimens; the generic identity is therefore in some measure doubtful.

Victoria. Wendu river, *Robertson.*
W. Australia, *Drummond, 4th coll, n.* 322.

3. BLYXA, Thou.

Flowers usually dicœcious. Males several, protruding when open from a tubular 2-toothed spathe. Perianth-segments all linear, the 3 outer ones green, the 3 inner longer and petal-like. Stamens 8 or 9; anthers linear. Female flowers solitary in the sheath, the ovary sessile; perianth-tube above the ovary long and filiform, the segments as in the males or narrower. Style exserted, with 3 linear stigmas. Ovary narrow, with parietal placentas. Fruit narrow, enclosed in the spathe. Seeds many.—Submerged herbs, the leaves long and grass-like without laminæ, acute and entire, tufted with the peduncles at the bottom of the water.

Besides the Australian species, which is spread over tropical Asia, there is another from the Mascarene islands.

1. **B. Roxburghii,** *Rich. in Mem. Inst. Fr.* 1811, 77, t. 5. Leaves entirely submerged, long and narrow like those of *Vallisneria spiralis*, but more acute and not serrulate. Spathes both male and female on long slender peduncles, the males about 1½ to 2 in. long, containing several flowers, but usually only 1 to 3 protrude at the same time, on pedicels several lines longer than the spathe. Outer perianth-segments about 2½ lines long, the inner twice as long. Stamens about 8, the filaments short, the linear anthers not exceeding the outer perianth-segments. Female spathe usually longer and more slender than the male, the ovary much shorter, but the perianth-tube projecting above ½ in. from the spathe, the segments narrower than in the males. Fruit narrow, entirely enclosed in the spathe, varying from 1 to 2 in., the seeds not very numerous.—*Vallisneria octandra*, Roxb. Pl. Corom. ii. 34, t. 165; *Blyxa octandra*, Planch. Mss.; Thw. Enum. Pl. Ceyl. 332.

N. Australia. Robinson river, Gulf of Carpentaria, *F. Mueller;* Port Darwin, *Schultz, n.* 423.
Queensland. Water-holes, Rockingham bay, and Burdekin river, *Dallachy.*
S. Australia. Waters near Lake Torrens, *F. Mueller.*

Our specimens are not sufficiently perfect to show the form of the female perianth, nor whether it has the three stamens mentioned by Decaisne and by Thwaites, but which do not appear to be always present in the Indian plant.

4. VALLISNERIA, Linn.

Flowers dicœcious. Males minute and very numerous in an ovoid-globular 3-lobed spathe. Perianth-segments 3. Stamens 1 to 3; anthers with 2 globular cells. Female flowers solitary and sessile in a narrow tubular 3-toothed spathe. Perianth-tube not produced above the ovary; segments 3. Staminodia (or inner perianth-segments?) 3, small, bifid, alternating with the perianth-segments. Stigmas 3, broad, 2-dentate or bifid. Ovary narrow, with 3 parietal placentas. Fruit narrow-cylindrical, enclosed in the spathe. Seeds numerous, cylindrical.—Submerged herbs, the leaves and peduncles tufted at the bottom of the water, the leaves very long, without any lamina.

The genus is generally distributed over the tropical and temperate regions of the New as well as the Old World, the Australian species being the one most common over the whole area.

1. **V. spiralis,** *Linn. Sp. Pl.* 1441. Leaves entirely submerged, very long and narrow when the water is deep, short in shallow water, obtuse or acute and more or less serrulate at the end with minute teeth, or sometimes perhaps quite entire. Male spathes about 3 lines long, on a peduncle usually short, but said to break off and enable the flower to float to the surface and fecundate the female. Flowers minute, apparently forming an ovoid or globular head not quite so long as the spathe, but the pedicels really 3 or 4 times as long as the minute perianth. Female spathe usually about ½ in. long, very narrow, on a spirally coiled filiform peduncle, which unfolds so as to carry the flower to the surface till after fecundation, when it contracts and brings the ovary down to the bottom to mature. Perianth very small but larger than in the males. Fruiting spathe only slightly enlarged.—Rich. Mem. Inst. Fr. 1811, t. 3; Reichb. Ic. Fl. Germ. t. 60; Hook. f. Fl. Tasm. ii. 37; *V. spiralis* and *V. nana*, R. Br. Prod. 345.

N. Australia. Albert and Roper rivers, *F. Mueller;* Arnhem's Land, *R. Brown.* **Queensland.** Burnett river, *F. Mueller;* between Cleveland and Rockingham bays, *W. Hill;* Fitzroy river, *O'Shanesy*, several feet long. **N. S. Wales.** New England, *C. Stuart;* lagoons near Richmond, *Wilhelmi.* **Victoria.** Wendu river, *Robertson;* Avon, Tambo, Mitta-Mitta, and Murray rivers, *F. Mueller.*

Tasmania. Very common in the South Esk river, *Gunn.* **S. Australia.** Torrens river, *F. Mueller.*

The Australian specimens I have seen prove to be all females; I have described the males from European ones. Brown's *V. nana* was founded on a dwarf narrow-leaved form, such as I have seen from some other countries. The leaves of his specimens are as described by him mostly acute and all quite entire, but one or two are obtuse, and in the larger forms from New South Wales, Victoria, and Tasmania the shorter submerged leaves are sometimes acute, and occasionally, whether obtuse or acute, without any or scarcely any of the minute serratures which usually characterize them.

5. HYDRILLA, Rich.

Flowers dioecious, both sexes solitary in a short tubular spathe. Male perianth shortly pedunculate, the outer segments ovate and green, three inner ones oblong-linear and petal-like. Stamens 3, with reniform anthers. Female perianth with a long filiform tube above the ovary, the segments all petal-like and less unequal than in the males. Style elongated, with 3 filiform stigmas. Ovary 1-celled, with 3 parietal placentas. Fruit cylindrical, linear, with few seeds.—Submerged herbs with branching stems and short verticillate leaves. Spathes sessile in the axils.

The genus is restricted by Caspary to the single species common in still and slowly running waters of the tropical and temperate regions of the Old World, the Australian form being the typical one originally described from India.

1. **H. verticillata,** *Casp. in Monatsber. Akad. Berl.* 1857. Stems leafy throughout, much branched and floating under water in large

masses. Leaves all in whorls of 4 to 8, except a single small sheathing one at the base of each branch and a pair only next above it, all oblong-lanceolate or broadly linear, 2 to 4 lines long and serrulate in the Australian as in the typical Indian form, very narrow-linear in some Asiatic varieties. Male spathes not seen; the above character taken from Roxburgh and others. Female spathes sessile and solitary, shorter than the leaves, the perianth-tube $\frac{1}{2}$ to $\frac{3}{4}$ in. long in the Australian specimens, the outer perianth-segments nearly $1\frac{1}{2}$ lines long, the inner ones shorter and narrower. Fruit linear, with few seeds.—*Serpicula verticillata*, Linn. f. Suppl. 416; Roxb. Corom. Pl. t. 164; *Hydrilla ovalifolia*, Rich. in Mem. Inst. Fr. 1811, 76, t. 2; *Udora australis*, F. Muell. Second Gen. Rep. 16.

N. Australia. Gilbert and Roper rivers, *F. Mueller.*
Queensland. Water-holes near Rockhampton, *Bowman, O'Shanesy;* near Herbert river, *Dallachy;* Mount Elliott, *Fitzalan.*
N. S. Wales. Richmond river, *Fawcett;* Balfour's station, *Leichhardt.*
Victoria. Murray river, *F. Mueller.*

Order CXIX. SCITAMINEÆ.

Flowers hermaphrodite or unisexual, irregular. Perianth superior, normally of 6 parts in two series, the 3 outer ones united in a 3-toothed or 3-lobed tube or upper lip, or in genera not Australian free, the 3 inner ones variously combined with the outer perianth or more frequently with the staminodes or stamen, or the lower one free. Stamens normally 3 or 6, but in most genera only 1, in *Musa* only 5, bearing anthers, the others either wanting or converted into barren petal-like staminodes often called an inner corolla, or short and linear; in most genera one of them is usually larger, broadly petal-like and on the side opposed to the perfect stamen and is then called the *labellum*. Anthers 2-celled or in genera not Australian 1-celled. Ovary inferior, 3-celled, with 1 or more ovules in each cell or rarely 1-celled. Style simple with a terminal entire or lobed stigma. Fruit a berry or a fleshy or dry capsule. Seeds albuminous.—Herbs, usually with a perennial rhizome. Stem short or rarely elongated unless formed of the convolute leaf-sheaths, and then often attaining a considerable height. Leaves entire, with long sheathing petioles, the limb often very large, with very numerous parallel veins diverging from the midrib. Flowers often very showy, in spikes racemes or panicles, on a radical or terminal scape or peduncle.

A considerable tropical or subtropical Order, common to the New and the Old World. The Australian genera are all Asiatic also, and two of them extend to America. Of the nine species, however, here enumerated, I have seen specimens of three only, the specific descriptions of the other six are taken from a sheet of Mueller's Fragmenta, received at the moment of placing this portion of the copy in the printer's hands, whilst the generic characters have necessarily been extracted from other works and checked by Asiatic specimens, and may therefore not always agree precisely with the plants here referred to them.

Tribe 1. **Musaceæ.**—*Inner and outer perianth more or less combined, or each 3-parted to the base. Perfect stamens usually 5.*

Perianth of 2 segments, the upper outer one 5-lobed at the end, the lower inner one much smaller . . . . . 1. Musa.

Tribe 2. **Zingiberaceæ.**—*Outer perianth or calyx 3-toothed or spathaceous; inner perianth or corolla free from it, combined at the base with the filament into a tube. One perfect upper stamen and one large petal-like lower staminode or labellum opposite it.*

Flowers in dense spikes with imbricate bracts, on a short scape separate from the leafy stems or tufts.
Flowers 3 to 5 within each bract. Corolla with 2 inner lobes or petal-like staminodes . . . . . 2. Curcuma.
Flowers solitary within each bract. Corolla without inner lobes.
Connective produced into a 3-lobed appendage beyond the anther. Corolla-lobes as long as the tube . . . . . 3. Amomum.
Connective not produced beyond the anther. Corolla-tube slender, much longer than the lobes . . . . . 4. Elettaria.
Flowers in a loose raceme or thyrsus terminating a leafy stem. Labellum flat, spreading . . . . . 5. Alpinia.
Flowers in a thick dense spike with imbricate bracts, terminating a leafy stem. Labellum convolute erect.
Ovary 3-celled. Labellum longer than the corolla . . . . 6. Costus.
Ovary 2-celled. Labellum shorter than the corolla . . . . 7. Tapeinocheilos.

Tribe 1. Musaceæ.—Inner and outer perianth more or less combined, or each 3-parted to the base. Perfect stamens usually five.

1. MUSA, Linn.

Flowers usually unisexual. Perianth of 2 segments, the outer one formed of the 3 outer and 2 of the inner parts, tubular in the bud but open from the base on the lower side, petal-like, with 5 teeth or short lobes of which 2 inner ones usually smaller than the three outer; the inner perianth-segment (or third inner part) much shorter and usually recurved. Perfect stamens 5, with linear anthers, the sixth either wanting or forming a filiform staminode adnate to the inner perianth-segment. Ovary 3-celled, with numerous ovules. Style elongated, clavate, with a concave stigma. Fruit oblong or cylindrical, often curved, more or less succulent and indehiscent. Seeds numerous, with a coriaceous testa and a broad concave hilum; albumen copious, mealy or almost granular.—Tall often almost tree-like herbs, the convolute sheaths of their very long large leaves forming a stem of considerable height. Scapes protruding from the centre of the leaf-sheath. Flowers clustered in the axils of large coloured bracts, forming a long terminal spike or raceme, either drooping, or, in species not Australian, erect.

The genus is limited to the tropical regions of the Old World. The only Australian species is believed to be endemic.

1. **M. Banksii,** *F. Muell. Fragm.* iv. 132. "A species of moderate height, very readily stoloniferous, with the habit of *M. paradisiaca*," to which it is evidently very closely allied if really distinct. Leaves

"5 or 6 ft. long, on a petiole of 1½ to 2 ft.," not including probably the sheathing base. Raceme apparently recurved. Bracts oblong, rather obtuse, 3 to 4 in. long, a few of the lower ones much longer and acuminate. Flowers from 10 to 20 within each bract, on short pedicels. Male perianth (from a wild specimen) conspicuously striate with numerous parallel longitudinal veins, the outer convolute segment about 1¼ in. long and 5 lines broad if spread open, shortly 5-lobed, the 3 outer lobes lanceolate, about 2 lines long, the 2 inner ones oblong and rather shorter; the lower inner segment 4 or 5 lines long and at least 3 lines broad, striate like the outer one, but with a prominent midrib (or adnate staminode ?) produced into a rather long point beyond the segment. Stamens nearly as long as the outer segment. Ovary rudimentary, with a style about as long as the stamens, slightly clavate at the end. Female flowers (from a specimen cultivated in the Melbourne Botanic Garden) with an ovary of nearly ¾ in. Outer perianth-segment under 1 in. long, the outer lobes narrower and more acute than in the males, the inner lobes linear; lower inner segment narrow-lanceolate, above ½ in. long. Anthers linear but smaller than in the males. Style rather shorter than the outer perianth-segment, thickly clavate towards the end, with a large concave oblique unequally lobed stigma. Fruits (from the wild specimens) in bunches of 12 to 20, each one on a stipes of 1 to 2 in., cylindrical, straight or slightly incurved, 4 to 5 in. long, ½ to ¾ in. diameter when dry. Seeds about 2 lines diameter, irregularly angular from pressure; testa coriaceous, marked with a broad concave hilum; albumen very white mealy almost granular.

Queensland. Mount Elliott, *Fitzalan;* Rockingham bay, *Dallachy.*—Gærtner's figure, which F. Mueller thinks may have been taken from this species, appears to me to represent the true *M. paradisiaca.* I find no record of Banks and Solander having seen any *Musa* in Australia. If they had brought fruits home they would surely have been mentioned by R. Brown, either in the Prodromus or in his notes on the geographical distribution of the genus in his Observations on the Botany of Congo.

Tribe 2. Zingiberaceæ.—Outer perianth or calyx 3-toothed or 3-lobed or spathaceous; inner perianth or corolla free from it, combined with the filament into a tube, the limb 3-lobed with sometimes 2 inner additional lobes or staminodia. One perfect upper stamen, with a 2-celled anther embracing the style, and one large petal-like labellum or lower staminode opposite it and sometimes 2 short linear staminodes (stylodes of Horaninow) at the base of the style.

2. CURCUMA, Linn.

Flowers hermaphrodite. Calyx tubular, 3-toothed; corolla-tube longer than the calyx, the limb of 3 outer lobes of which the upper one is broader than the 2 others, and 2 inner lobes or staminodes resembling the 2 outer lower lobes and adnate at the base on their inner margins to the short broad petal-like filament of the perfect stamen. Labellum broad and petal-like; two short linear staminodes at the base

of the style. Anther oblong-linear, the 2 cells folded round the summit of the style and produced at the base into auricles or spurs. Ovary 3-celled. Style filiform, with a capitate stigma. Capsule 3-celled, loculicidally 3-valved. Seeds several, arillate.—Herbs with a perennial rhizome and clustered fleshy roots. Leaves with convolute sheathing bases. Scapes simple, with a thick erect spike. Bracts concave or saccate and imbricate at the base, with broad spreading often coloured ends. Flowers yellow, 3 to 5 within each bract.

The genus is generally distributed over tropical Asia, the only Australian species is, as far as hitherto known, endemic.

1. **C. australasica,** *Hook. f. Bot. Mag.* t. 5620. Rhizome with a cluster of white cylindrical tuberous roots. Leaves 1 to 1½ ft. long, lanceolate or narrow-elliptical, acute, tapering into a long sheathing petiole. Scape lengthening to about 6 in. below the broad spike, which attains from 5 to 7 in., the upper bracts 1 to 1½ in. long, with broad spreading rose-coloured ends, the lower bracts green, closely erect and broadly saccate at the base, with short broad spreading ends. Flowers of a pale yellow, about as long as the lower bracts. Corolla-tube twice as long as the calyx, dilated upwards, the upper lobe concave and broad, the lateral outer ones and upper inner one or staminodes broadly oblong; labellum broadly orbicular almost reniform, notched and undulate on the margin. Anther-auricles narrow and acute.

Queensland. Cape York, *Daemel, Gulliver;* Cape Sidmouth, *C. Walter.*—The dried specimens too much crushed to admit of a careful examination of the structure of the flower; the above description taken chiefly from that given by Dr. Hooker in the Botanical Magazine.

3. AMOMUM, Linn.

Calyx tubular, spathaceous or 3-lobed at the top. Corolla-limb as long as the tube, 3-lobed, the dorsal lobe broader than the lateral ones, without inner lobes. Labellum large, flat, entire or lobed. Filaments flat, the connective produced beyond the anther-cells into a 3-lobed appendage, the lateral lobes divaricate, the middle one erect, entire or notched; anther-cells embracing the style. Two small linear staminodes at the base of the style. Ovary 3-celled. Style filiform, clavate at the end, with a concave stigma. Fruit succulent or opening in 3 valves. Seeds arillate.—Herbs with creeping rhizomes. Leaves on barren stems often several feet high. Flowering scapes short, with sheathing scales. Spike short, with broad imbricate bracts. Flowers usually large, one within each bract.

The genus is widely spread over the tropical regions of both the New and the Old World. The only Australian species, which I have not seen, is believed to be endemic.

1. **A. Dallachyi,** *F. Muell. Fragm.* viii. 25. Leaves lanceolate, narrow-pointed, often above 1 ft. long and nearly 2 in. broad. Scapes very short. Bracts shorter than the calyx, a few larger ones at the base of the spike, the largest 1½ in. long. Calyx about 1 in long, membranous, striate-veined, shortly 3-toothed. Corolla yellow, the lobes

about an inch long and rather longer than the tube, the dorsal one broadly ovate, the lateral ones oblong. Labellum as long as the corolla, ¾ in. broad, orbicular, contracted at the base, shortly and obtusely 3-lobed, thickened along the centre. Middle lobe of the connective-appendage shorter than the lateral ones. Capsule green, nearly globular, unequally muricate, tardily opening in 3 valves. Seeds rather numerous.

Queensland. Rockingham bay, *Dallachy*.—The above description extracted from that given by F. Mueller.

4. ELETTARIA, White.

Calyx tubular, 2- or 3-toothed. Corolla-limb 3-lobed, shorter than the slender tube, without inner lobes. Labellum large, flat, entire or lobed. Filament flat, but the connective not produced beyond the anther-cells; anther-cells embracing the style. Two small linear staminodes at the base of the style. Ovary 3-celled. Style filiform, clavate at the end, with a concave stigma. Fruit succulent or opening in 3 valves. Seeds arillate.—Herbs with the habit of *Amomum*, but usually more slender, with smaller flowers, fewer in a looser spike.

The genus extends over tropical Asia, the Australian species, which I have not seen, is believed to be endemic.

1. **E. Scottiana,** *F. Muell. Fragm.* viii. 24. Rhizome woody, the leafy stems attaining 12 ft. or more, including the long lanceolate leaves, which are 1½ to 2 ft. long and 3 to 4 in. broad in the middle. Scapes about 2 in. long, with imbricate sheathing scales, passing into involucral bracts of about 2 in., silky-pubescent outside. Bracts under each flower membranous, pellucid, 2 to 3 in. long. Calyx the length of the bracts. Corolla-tube 3 to 4 in. long, very slender, the lobes red, nearly equal, oblong, at least ½ in. long. Labellum rather longer than the corolla-lobes, ovate, entire. Connective not extending beyond the apex of the anther-cells. Capsule ovate or ellipsoid, opening tardily in 3 valves. Seeds numerous.

Queensland. Rockingham bay, *Dallachy*.—The above description extracted from that given by F. Mueller.

5. ALPINIA, Linn.

(Hellenia, *Willd.*)

Flowers hermaphrodite. Calyx tubular, 3-toothed, often spathaceous. Corolla-tube longer than the calyx, the limb of 3 usually unequal lobes. Labellum broad, flat, usually exceeding the corolla-lobes. Filament narrow, often filiform, the connective not at all or only very shortly produced beyond the anther-cells. Two short linear staminodes at the base of the style. Ovary 3-celled, with many ovules. Style filiform. Stigma terminal, concave. Fruit globular or obovoid, succulent or with a crustaceous or dry pericarp, indehiscent or rarely obscurely 3-valved. Seeds not very numerous.—Erect herbs with a

tuberous rhizome and leafy stems. Flowers in a terminal raceme thyrsus or raceme-like panicle. Bracts usually deciduous.

A tropical genus limited to the Old World. The three Australian species, of which I have only seen one, are believed to be endemic. The genus *Hellenia*, united with *Alpinia* by Roscoe, was again separated by Brown, chiefly with reference to the *H. cærulea*, Br., which differs from most other species, even from Willdenow's *H. chinensis*, in the short terminal appendage to the anther and the crustaceous not baccate fruit. But *A. Allughas* has precisely the same fruit, and the projection of the connective is so short as to be of very little importance. I had therefore in the Flora Hongkongensis proposed reuniting the genera, and F. Mueller in his MSS. notes also suggests the consolidation.

Raceme simple. Anther-connective not produced beyond the cells.
Capsule tardily 3-valved . . . . . 1. *A. racemigera.*
Thyrsus or panicle narrow. Anther-connective produced beyond the cells.
Flowers under 1 in. long. Anther-connective very shortly produced. Fruit crustaceous indehiscent . . . . . 2. *A. cærulea.*
Flowers above 1 in. long. Anther-appendage obovate 2 lines long.
Capsule ellipsoid, 3-valved . . . . . 3. *A. arctiflora.*

1. **A. racemigera,** *F. Muell. Fragm.* viii. 27. A low species. Leaves long-lanceolate, acuminate, about 1 ft. long and 2½ in. broad, on a minutely biauriculate sheath without any intervening petiole. Flowers pale yellow, numerous in a single raceme of ½ ft. or shorter, the rhachis and pedicels pubescent. Bracts lanceolate, shorter than the pedicels which are 2 to 3 in. long. Calyx unequally divided to the middle into 3 lobes, about 4 lines long. Corolla glabrous, about 8 lines long, the lobes about as long as the tube, nearly equal but the upper one more concave. Labellum orbicular-rhomboidal, 3 to 4 lines diameter. Filament broadly linear, ¾ line long; anther nearly 1 line, the connective not produced beyond the cells. Style capillary, with a minute stigma. Capsule ovoid, red, 4 to 7 lines long, opening tardily in 3 valves. Seeds shining, 2 to 7 in each cell.

Queensland. Rockingham bay, *Dallachy.*—I have seen no specimen. The above description is an abridgment of the one given by F. Mueller.

2. **A. cærulea,** *Benth.* Leafy stems attaining 4 or 5 ft. Leaves oblong-lanceolate, often above 1 ft. long and 2 in. broad, acutely acuminate, shortly petiolate above the sheath, which ends in a broad obtuse erect auricle of 3 or 4 lines. Thyrsus terminal, 4 to 8 in. long, appearing almost as a simple raceme when first flowering, but most of the peduncles, though short, developing 2 to 6 flowers, on pedicels of ½ to ¾ in., the whole peduncle usually much shorter. A convolute bract of ½ in. or less under each pedicel or branch, and 2 or 3 long lanceolate sheathing bracts at the base of the panicle, often 2 in. long. Calyx narrow, 4 to 5 lines long, usually split on the lower side. Corolla-tube slender, 6 to 7 lines long, lobes oblong-linear, about 4 lines long, the dorsal one scarcely broader than the others. Labellum longer than the lobes, broadly orbicular or almost reniform, about ½ in. diameter. Connective produced beyond the anther in a rounded or truncate appendage, not 1 line long. Fruit globular, indehiscent, about ½ in.

diameter, with a brittle crustaceous pericarp. Seeds few in each cell, closely packed, with a small arillus.—*Hellenia cærulea*, R. Br. Prod. 308.

Queensland. Shoalwater bay and Northumberland islands, *R. Brown;* Endeavour river, *A. Cunningham;* Moreton island, *F. Mueller;* Fitzroy island, *C. Walter;* very common about Rockingham bay, *Dallachy*, and Rockhampton, *O'Shanesy.*

N. S. Wales. Hunter's river, *R. Brown;* Tweed river, very common, *Guilfoyle;* Hastings and Clarence rivers, *Beckler;* Richmond river, *Henderson, Fawcett.*

3. **A. arctiflora,** *F. Muell. Fragm.* viii. 25. Stems attaining 12 ft. Leaves long-lanceolate about 1½ ft. long and 2½ to 4 in. broad, contracted into a very short petiole above the long sheathing base. Panicle narrow and dense, pubescent as well as the under side of the leaves. Outer bracts few, rather above 1 in. long, those subtending the peduncles 1½ in. long or shorter. Calyx about 1 in. long, narrow, dilated upwards and acutely 3-lobed. Corolla white, pubescent outside, the lobes about 4 lines long, the tube longer. Labellum longer than the corolla, 2-lobed, at least ½ in. long and broad. Connective produced beyond the anther-cells into a cuneate-obovate appendage of about 2 lines. Style glabrous. Capsule ellipsoid, 3-valved, many-seeded.—*Hellenia arctiflora*, F. Muell. l.c.

Queensland. Rockingham bay, *Dallachy.*—I have seen no specimen, the above character is taken from that given by F. Mueller.

6. COSTUS, Linn.

Flowers hermaphrodite. Calyx tubular, shortly 3-lobed. Corolla-tube short, the limb with 3 erect lobes. Labellum convolute, erect, usually large. Filament broad and petal-like, continuous with the connective and produced laterally and beyond the cells into a broad appendage. No staminodes. Ovary 3-celled, with numerous ovules. Style filiform, the stigma dilated, flatly 2-lobed, with 2 dorsal appendages. Capsule 3-celled, opening loculicidally in 3 valves. Seeds arillate.—Herbs with an erect leafy stem and a dense terminal spike. Bracts broad, imbricate, with 1 flower in the axil of each.

The genus is spread over the tropical regions of both the New and the Old World. The Australian species, which I have not seen, is believed to be endemic.

1. **C. Potieræ,** *F. Muell. Fragm.* iv. 164. Stems about 10 ft. high. Leaves on very short petioles, oblong-lanceolate, acutely acuminate, 4 to 9 in. long, 1½ to 2½ in. broad, sprinkled underneath with appressed hairs, the sheath shortly produced above the petiole, truncate and ciliate. Spike dense, globose or ovoid-globose, 2 to 3 in. long. Bracts scarlet, shorter than the calyx. Calyx about 1 in. long, 3-toothed. Corolla yellow, the lobes 8 to 10 lines long and nearly equal. Labellum 1 in. long or rather larger, orbicular, undivided, striate along the centre. Filament and connective produced into a narrow border and a long terminal appendage beyond the anther-cells. Capsule crowned by the persistent calyx, about ½ in. long, opening loculicidally in 3 slits.

Queensland. Rockingham bay, *Dallachy.*—The above description extracted from that given by F. Mueller.

7. TAPEINOCHEILOS, Miq.

Flowers hermaphrodite. Calyx tubular, shortly 3-lobed. Corolla-tube short, the limb 3-lobed, the dorsal lobe rather broader and shorter than the lateral ones. Labellum erect, concave, shorter than the corolla, obscurely 3-lobed. Filament broadly petal-like, continuous with the connective and shortly produced beyond the anther-cells. No staminodia. Ovary 2-celled, with numerous ovules. Style filiform, the stigma dilated, flatly 2-lobed, without appendages. Fruit (dry ?) apparently indehiscent, crowned by the persistent coriaceous calyx, 2-celled. Seeds angular, with a small arillus.—Herb with the habit of *Costus*.

The genus is limited to a single species, native of the island of Ceram in the Indian Archipelago, the Australian plant, which I have not seen, is believed to be identical as to species.

1. **T. pungens**, *Miq. in Ann. Mus. Lugd. Bat.* iv. 101, t. 4. Stem about 2 ft. high, covered with sheathing scales, some of which emit from their axils leafy branches. Leaves ovate-oblong, terminating abruptly in a narrow rigid point. Spike terminating the main stem very dense, 6 in. long and 3 in. broad in our specimen, larger as figured by Miquel. Bracts rigid, striate, imbricate, the broad ends recurved, of a rich crimson. Flowers yellow, scarcely exceeding the bracts. Calyx about 10 lines long. Corolla $1\frac{3}{4}$ in. long. Labellum much shorter. Fruiting calyx rigidly coriaceous, compressed but thick, above 1 in. long, the lobes recurved and rigid, the free tube as long as and quite continuous with the adnate base.—*Costus pungens*, Teysm. and Binnend.

Queensland. Rockingham bay, *Kennedy, Dallachy* (*F. Mueller*).—Not having seen the Australian specimens, I have taken the above character from Miquel's elaborate description and figure and from a fruiting specimen received from the Botanic Garden, Calcutta.

Order CXX. ORCHIDEÆ.

Flowers hermaphrodite. Perianth superior, irregular or rarely regular, of 6 petal-like or green segments, all free or variously united; 3 outer ones called *sepals* all similar and erect or spreading, or the *dorsal* one (next to the main axis unless the flower is reversed by a twist of the ovary) more concave or otherwise different from the 2 *lateral* ones (lower ones unless the flower is reversed), which are always similar to each other; 2 inner segments called *petals*, similar to each other, one on each side of the dorsal sepal, and sometimes connivent or connate with it into a *galea*, sometimes similar to the lateral sepals, or different from all the sepals; the sixth segment or third petal called the *labellum*, different from all the others (except in *Thelymitra* and *Apostasia*), inserted between the lateral sepals at the base of the column, and exceedingly varied in size, shape, lobes, calli, fringe, or other appendages. In the centre of the flower or somewhat under the dorsal sepal is the *column*, consisting of the combined androecium and pistil; at the apex attached to the dorsal margin is usually one anther, erect

incumbent on or adnate to the apex of the column or to the back of the stigma, with 2 cells on its inner face or almost marginal. In the genus *Cypripedium* which is not Australian, and in *Apostasia*, there are two lateral perfect anthers. Pollen either waxy granular or mealy, usually more or less distinctly collected into 1, 2, or 4 pairs of pollen-masses, either oblong or tapering to the upper end, free or attached by their narrow end, either directly or by a linear or filiform *caudicle*, to a gland on the rostellum or apex of the stigma, or sessile on that apex without a gland. In front of the column either at or near its apex or lower down is a concave or rarely convex viscid stigma, the upper margin often produced into an erect appendage called the *rostellum* sometimes very short, sometimes as long as or longer than the anther; each side of the column towards the front shows a longitudinal angle, often expanded in the whole or part of its length into a wing, sometimes continued behind the anther into a hood over it, or expanded into two auricles or appendages (sometimes described as staminodia) one on each side between the stigma and the anther, sometimes continued into a basal projection of the column or even continuous with raised lines on the labellum, or in *Thelymitra* the two wings shortly joined in front of the column, or in *Apostasia*, the style normally cylindrical with a terminal stigma. Ovary inferior, 1-celled or with 3 parietal placentæ, or in *Apostasia* perfectly 3-celled with innumerable ovules. Fruit capsular, opening in 3 valves or longitudinal slits, or very rarely succulent and indehiscent. Seeds minute, fusiform or rarely winged, resembling fine sawdust. Embryo a solid, apparently homogeneous body.—Herbs usually perennial, either *terrestrial* with underground rhizomes creeping or producing annually renewed tubers or thick clustered fibres, or *epiphytical* with creeping rhizomes and (often fleshy) fibrous roots adhering to the surface of rocks or trunks or branches of trees. Leaves either alternate and sheathing at the base and sometimes distichous, on flowering stems which when epiphytical are sometimes thickened into *pseudo-bulbs*, or in radical tufts at the base of the flowering stems or in tufts or on pseudo-bulbs distinct from the flowering ones, entire or very rarely lobed (see *Acianthus*). Flowering stems scapes or peduncles annually renewed, either proceeding directly from the rhizomes or axillary on perennial leafy stems or pseudo-bulbs, bearing usually one or more scarious or membranous sheathing scales, either without any leaves, or when leafy 1 or 2 sheathing scales below the leaves and often 1 or more above them. Flowers either solitary and terminal or 2 or more in a terminal raceme or spike, either simple or branching into a panicle, each flower sessile or more frequently pedicellate within a bract, but without bracteoles on the pedicel.

The Order is one of the most natural and sharply defined, as well as the most numerous amongst Monocotyledons after Gramineæ, and abundantly distributed over the whole globe, rare only in some high Alpine or extreme Arctic and Antarctic regions. The 48 Australian genera may be geographically divided into two groups. 28 genera, comprising one-third of the total number of species, including the whole of the tribes Malaxideæ, Vandeæ, Bletideæ, Arethuseæ, the first group of Neottideæ, and the Ophrydeæ belong to the tropical Asiatic Flora, represented in Australia by endemic or frequently by identical species. These are all tropical or eastern, some extending down

to Tasmania, but none found in West Australia: five of these genera are also in New Zealand. The remaining 20 genera, comprising two-thirds of the species, are essentially Australian, belonging to three Australian groups of Neottideæ; four of these genera are however represented by single or very few species in the Indian Archipelago, and eleven have New Zealand congeners, sometimes identical in species.

In the elaboration of the genera and other groups endemic in or represented in Australia, I have had little to do but to follow in the footsteps of Brown and Lindley, to the whole of whose typical specimens I have had free access, and in the identification of species I have been materially assisted by the verbal communications as well as by the published labours (especially the Beiträge above quoted) of the younger Reichenbach, as well as by the admirable illustrations of Hooker's Flora Tasmanica. In this case, however, as in the rest of the present work, I have made it a rule to work out the descriptions of genera as well as of species, in the first instance, from the specimens themselves wherever they admitted of examination, and afterwards to check them by those of the great authorities on the Order. I have thus had no alterations of any note to propose in the circumscription of generic or subgeneric groups, which in Australia are very fairly defined, but I have had sometimes to choose between the different views of Lindley and of Reichenbach as to the grade to be assigned to these groups, always so much a matter of individual opinion. As to species, I have had for examination, especially in the very rich herbarium placed at my disposal by F. Mueller, a far greater mass of excellent materials than any of my predecessors, showing for instance how great is the range of variation exhibited in the precise form, markings, and processes of the labellum in many of the commoner terrestrial Australian Orchids, as in the Mediterranean Ophrydes. I have therefore felt obliged very much to reduce the number of published species of *Thelymitra*, *Diuris*, *Prasophyllum*, *Microtis*, and *Caladenia*. I must however admit that the circumscription of several of these species is still far from satisfactory; the forms can often scarcely be ascertained accurately from dried specimens, and colours very rarely. It is to be hoped, therefore, that the revision of these and some other genera will be taken up by resident botanists who have an opportunity of studying them in a fresh state.

Tribe. 1 **Malaxideæ.**—*Anther lid-like, incumbent, usually deciduous. Pollen-masses waxy, 2, 4, or rarely 8, without caudicles or gland. Epiphytes or rarely terrestrial with a creeping rhizome.*

Anther-cells longitudinal. Lateral sepals not dilated at the base. Labellum embracing or adnate to the column at the base.

Column elongated. Leaves at or near the base of the stem. Flowers very small . . . . . 1. Liparis.

Column very short. Leaves distichous. Flowers minute . . 2. Oberonia.

Anther-cells longitudinal. Lateral sepals dilated at the base and forming with the basal projection of the column a pouch or spur.

Pollen-masses 2, or 4 in pairs.

Labellum with a broad erect base usually expanded into lateral lobes. Stems or pseudobulbs bearing both leaves and peduncles (except the sect. *Rhizobium*) . . . . 3. Dendrobium.

Labellum distinctly unguiculate, not lobed. Leaves (on pseudobulbs) and peduncles from distinct nodes of the rhizome . . . . . 4. Bolbophyllum.

Pollen-masses 8, flowers minute . . . . . 5. Phreatia.

Anther-cells nearly transverse. Leaf long. Raceme on a long recurved peduncle . . . . . 6. Pholidota.

(The pollen-masses are almost waxy without caudicles in one species of *Galeola*.)

Tribe 2. **Vandeæ.**—*Anther lid-like, incumbent, usually deciduous. Pollen-masses waxy, 4 in pairs, on a single or double caudicle attached to a gland. Epiphytes or terrestrial with creeping rhizomes.*

Epiphytes. Caudicle single.

Sepals and petals united to the middle. Very small plants with minute flowers . . . . . 7. Tæniophyllum.

Sepals and petals free.
Labellum with a fleshy protuberance underneath between or beyond the lateral lobes . . . . . 8. Sarcochilus.
Labellum with a hollow spur or pouch near the base.
Labellum 3-lobed, the spur with a reflexed or horizontal scale inside . . . . . 9. Cleisostoma.
Labellum 3-lobed, the spur without any internal scale.
Flowers large . . . . . 10. Vanda.
Labellum undivided, the spur without any internal scale.
Lateral sepals dilated at the base . . . . . 11. Saccolabium.
Terrestrial with short creeping rhizomes. Caudicle single.
Sepals and petals erect. Labellum scarcely saccate at the base, the disk with longitudinal raised lines . . . . . 12. Geodorum.
Sepals and petals spreading. Labellum with a short pouch or spur at the base, marked with cristate or bearded veins . . 13. Eulophia.
Terrestrial with short creeping rhizomes. Caudicle bipartite.
Labellum gibbous and adnate to the column at its base . . 14. Dipodium.

Tribe 3. **Bletideæ.**—*Anther lid-like, incumbent, usually deciduous. Pollen-masses waxy, 4 or 8, tapering at the base, separately attached and sessile on short caudicles, or on a short dichotomous caudicle. Terrestrial with creeping or rarely tuberous rhizomes or rarely epiphytes. Sepals and petals nearly equal, free and spreading. Flowers often large.*

Pollen-masses 4 in pairs, sessile on a gland. Usually epiphytes . 15. Cymbidium.
Pollen-masses 8, on very short separate caudicles without any gland. Terrestrial. Leaves long, plicate . . . . . 16. Spathoglottis.
Pollen-masses 8, on a short dichotomous caudicle without any gland. Terrestrial. Leaves large, plicate. Labellum spurred, convolute round the column . . . . . 17. Phaius.
Pollen-masses 8, separately attached to a divisible gland. Terrestrial. Leaves large, plicate. Labellum usually spurred, connate with the column at the base . . . . . 18. Calanthe.

Tribe 4. **Arethuseæ.**—*Anther lid-like, incumbent, usually deciduous. Pollen granular or mealy. Terrestrial or rarely epiphytes. Stems in the Australian genera or sections leafless at the time of flowering.*

Large epiphytes with paniculate flowers. Labellum curved round the column. Anther with a broad dorsal appendage . . . 19. Galeola.
Terrestrial. Flowers nodding, in a simple raceme.
Column very short. Sepals and petals free. Anther with a thick fleshy terminal appendage . . . . . 20. Epipogum.
Column elongated (longer than the anther).
Sepals and petals united in a 5-lobed cup or tube . . . . 21. Gastrodia.
Sepals and petals free . . . . . 22. Pogonia.

Tribe 5. **Neottieæ.**—*Anther erect or bent forward, persistent but free from the rostellum. Pollen granular or mealy. Terrestrial herbs with simple stems (except* Corymbis) *bearing 1 or more leaves or rarely leafless, and a single spike raceme or single flower.*

Column very long and persistent. Sepals and petals very long narrow and deciduous. Leaves large and strongly ribbed.
Panicles axillary. . . . . 23. Corymbis.
Column very short, with wings either very broad or produced between the anther and rostellum into lateral lobes or appendages.
Rhizome creeping. Leaves petiolate. Spike slender.
Flowers reversed, the lateral sepals forming a hood over the labellum . . . . . 24. Ramphidia.
Flowers erect, the dorsal sepal and petals forming a hood over the column. Stigma in a deep pouch . . . . . 25. Goodyera.

Rhizome with ovoid or oblong tubers or rarely thick clustered fibres. Leaves sessile, few or only one.
Flowers small, sessile in a dense spiral spike. Sepals and petals erect or spreading at the tips only . . . . . 26. SPIRANTHES.
Flowers racemose. Sepals broad and petal-like.
Dorsal sepal concave. Petals much smaller. Labellum densely fringed on the surface . . . . . 27. CALOCHILUS.
Sepals petals and labellum all alike and spreading. Column-wings connected at the base in front . . . 28. THELYMITRA.
Sepals and petals alike and spreading. Labellum with 2 lobes on the claw and a tuft of linear processes at the base of the lamina . . . . . 29. EPIBLEMA.
Flowers racemose. Lateral sepals narrow-linear and long. Labellum 3-lobed at or near the base.
Dorsal sepal embracing the column at the base, erect and open at the end . . . . . 30. DIURIS.
Dorsal sepal hood-shaped and incurved over the column . 31. ORTHOCERAS.
Flowers racemose, reversed. Sepals usually narrow. Labellum undivided.
Labellum dilated and enclosing the column at the base. Leaves flat. Flowers large. No caudicle . . . . . 32. CRYPTOSTYLIS.
Labellum contracted or clawed rarely gibbous at the base. Leaves terete. Flowers often small. Caudicle linear . 33. PRASOPHYLLUM.
Flowers spicate, small and green, not reversed. Labellum entire or 2-lobed. Lateral lobes of the column very small. Leaves terete. No caudicle . . . . . 34. MICROTIS.
Column short. Labellum tubular, erect under the hood-shaped dorsal sepal, with or without a reflexed lamina, lateral sepals and petals very narrow or minute. Small plants with 1 broad leaf and 1 large flower . . . . . 35. CORYSANTHES.
Column elongated (longer than the anther) semiterete or longitudinally winged. Stems simple, with 1 rarely 2 or 3 or no leaves. Rhizome with annually renewed tubers.
Labellum unguiculate, the lamina peltate or produced beyond its insertion into a basal appendage.
Dorsal sepal hood-shaped. Lateral sepals united at the base. Column semiterete with an oblong stigma about the middle and 2 hatchet-shaped wings above it. Labellum with a basal appendage . . . . . 36. PTEROSTYLIS.
Sepals and petals all linear.
Labellum rather broadly peltate. Column with a broad petal like wing its whole length . . . . . 37. CALEANA.
Labellum hammer-shaped. Column with 1 or 2 pairs of narrow auricles . . . . . 38. DRAKÆA.
Labellum-lamina sessile or not produced beyond its insertion on the claw.
One ovate-cordate leaf. Lateral sepals narrow. Petals short. Labellum undivided without fringes or erect calli, but two adnate ones at the base . . . . . 39. ACIANTHUS.
One ovate or lanceolate leaf. Lateral sepals oblong, stipitate. Labellum-lamina or middle lobe very convex and villous . . . . . 40. ERIOCHILUS.
One to three ovate or lanceolate leaves. Dorsal sepal broad. Labellum thickened along the centre, glabrous or papillose, without calli. Column not winged . . . . . 41. LYPERANTHUS.
No leaves on the flower-stem. Sepals and petals nearly equal, connivent. Labellum with 2 longitudinal raised lines without calli. Column winged . . . . . 42. BURNETTIA.
One broad leaf. Lateral sepals and petals very narrow and spreading. Labellum with two adnate calli at the base continued in raised lines. Column winged . . . . . 43. CYRTOSTYLIS.

One linear or oblong leaf. Lateral sepals as broad as or broader than the petals. Labellum with raised calli or fringes variously arranged. Column winged . . . . . 44. CALADENIA.
Two oblong leaves. Lateral sepals narrower than the petals. Labellum with raised calli or fringes. Column winged . 45. CHILOGLOTTIS.
One oblong or lanceolate leaf. Sepals and petals nearly equal, petal-like and spreading. Labellum without calli or fringes except 1 or 2 linear-clavate processes erect against the column . . . . . 46. GLOSSODIA.

TRIBE 6. **Ophrydeæ.**—*Anther adnate to the top of the column over the stigma, the cells usually forming 2 lobes. Pollen-masses 2, granular, attached by caudicles to one or two glands or pouches over the stigma. Terrestrial herbs, rhizomes with annually renewed tubers. Stems simple leafy. Flowers spicate.*

Labellum spurred, with 2 linear processes of the column incumbent on its base . . . . . 47. HABENARIA.

TRIBE 7. **Apostasieæ.**—*Anthers 2, lateral near the base of the style, with a dorsal rudimentary or rarely perfect anther. Stigma terminal. Pollen granular. Terrestrial herbs.*

Stem leafy. Panicles (as in *Corymbis*) axillary. Perianth of 6 equal segments . . . . . 48. APOSTASIA.

TRIBE 1. MALAXIDEÆ.—Anther lid-like, incumbent on the apex of the column which has usually a membranous margin, usually deciduous. Pollen-masses waxy, 2, 4, or rarely 8, without caudicles or gland. Epiphytes or rarely terrestrial, with a creeping rhizome.

1. LIPARIS, Rich.

(Sturmia, *Endl.*)

Sepals and petals all free and spreading, equal and similar or the petals and dorsal sepal narrower. Labellum shortly embracing or united with the column at the base, erect or ascending, entire. Column elongated, incurved, the apex winged. Anther terminal, lid-like. Pollen-masses 4, waxy, obovoid, equal in pairs in the two cells, which are sometimes not closely contiguous.—Terrestrial or epiphytical plants, the stems sometimes thickened at the base into small pseudo-bulbs. Leaves at or near the base of the stem. Flowers greenish-yellow white or faintly tinged with red, in a terminal pedunculate raceme.

The genus is widely spread over the tropical and subtropical regions of the Old World, with one northern species found in both hemispheres. The Australian species are, as far as known, all endemic.

Sepals all narrow and nearly equal.
Sepals and petals 3½ to 5 lines long. Labellum broadly oblong.
Flowers white . . . . . 1. *L. reflexa.*
Flowers yellow . . . . . 2. *L. cuneilabris.*
Sepals and petals 3 lines long. Labellum broadly obovate-cuneate . . . . . 3. *L. cœlogynoides.*
Lateral sepals broadly oblong, falcate. Dorsal sepals and petals longer, narrow-linear. Labellum broadly oblong . . . . . 4. *L. habenaria.*

1. **L. reflexa,** *Lindl. Bot. Reg. under n.* 882. Stems from a shortly creeping rhizome, thickened at the base, the whole plant including the

raceme varying from 3 or 4 in. to nearly 1 ft. high when luxuriant. Leaves almost distichous, the 2 or 3 lower ones reduced to acute sheathing scales, 1 to 3 upper ones oblong-lanceolate, 3 to 5 in. long and about ½ in. broad, with a short sheathing base, those of the barren pseudobulbs longer and contracted into a long sheathing base. Flowers yellowish white in loose racemes. Bracts lanceolate-subulate or subulate. Pedicels with the ovary 4 to 5 lines long. Buds falcate. Sepals and petals 4 to nearly 5 lines long, the sepals narrow-lanceolate, the petals linear. Labellum about as long as the sepals, the erect base embracing the base of the column but free from it, the lamina broadly oblong, concave, the margins slightly undulate and dilated at the base into 2 auricles or short lateral lobes embracing the apex of the column, the apex obtuse or retuse and sometimes denticulate-ciliate, the disk with 2 more or less marked longitudinal raised lines. Column narrow, incurved, about ½ as long as the sepals, the margins slightly dilated at the top into membranous wings.—Reichb. f. Beitr. 46; *Cymbidium reflexum*, R. Br. Prod. 331; *Sturmia reflexa*, F. Muell. Fragm. ii. 72, iii. 165.

N. S. Wales. Port Jackson, *R. Brown, Woolls;* Clarence river, *Beckler;* New England, *C. Stuart*; Tweed river, *Fitzgerald.*

2. **L. cuneilabris,** *F. Muell. Fragm.* iv. 164. Habit stature and loose racemes of rather large flowers of *L. reflexa*, but the flowers said to be yellow. Leaves more acute and tapering than in that species. Bracts shorter. Buds rather longer and narrower. Labellum shaped as in *L. reflexa*, of which this is probably a variety.—*Sturmia cuneilabris*, F. Muell. l.c.

Queensland. Rockingham bay, *Dallachy.*

3. **L. cœlogynoides,** *F. Muell. Fragm.* ii. 71. Habit nearly of *L. reflexa*, but the leaves more rigid and acute and those of the flowering stems more contracted at the base. Racemes much more slender than in *L. reflexa*, and the flowers smaller, the peduncle and rhachis flattened and almost winged in the specimens (possibly from pressure in drying?). Bracts lanceolate, acuminate. Ovary and pedicels about 3 lines long. Flowers (white?), very delicate. Sepals and petals linear, about 3 lines long, the petals about half as broad as the sepals. Labellum as long as the petals, the short base embracing the column, the lamina broadly obovate-cuneate, the broad end slightly denticulate. Column half as long as the sepals, narrow, incurved, 2-winged at the top.—*Sturmia cœlogynoides*, F. Muell. l.c.

N. S. Wales. Clarence river, *Beckler.*

4. **L. habenarina,** *F. Muell. Fragm.* iv. 131. Habit and foliage nearly of *L. reflexa*, but taller, often above 1 ft. high. Leaves several, tapering at both ends, mostly acute, ½ to 1 in. broad, very few of them reduced to sheathing scales. Racemes long and rigid. Pedicels short, erect or spreading, the flowers much smaller than in *L. reflexa*. Bracts short. Lateral sepals about 2 lines long, broadly oblong-falcate, obtuse;

dorsal sepal and petals linear, about 3 lines long, the petals still narrower than the sepal. Labellum as long as the lateral sepals, recurved from the middle, broadly oblong, shortly embracing and adnate to the column at the base, obtuse or retuse, the disk with 2 small prominent callosities. Anther-cells at some distance from each other in the anther-case.—*Sturmia habenarina*, F. Muell. l.c.

Queensland. Rockingham bay, *Dallachy.*—Very closely allied to the *L. ferruginea*, Lindl. in Gard. Chron. 1848, 55, from Borneo and Malacca, and perhaps a variety; but that species has a dark brown labellum showing its colour in the dried state, and from a note in Herb. Lindley, has no calli on the disk, whilst the *L. habenarina* has the labellum of the same pale yellow as the rest of the flower.

2. OBERONIA, Lindl.

Sepals free, nearly equal and erect, or the dorsal one smaller and reflexed. Petals narrower or shorter than the sepals. Labellum sessile, concave, entire or variously divided, often cushion-like or keeled at the base and usually embracing the column. Column very short, terete, contracted at the base, the apex with angular margins. Anther terminal, lid-like. Pollen masses 4, waxy, closely contiguous in pairs and often falling away in one mass, sometimes oblique and unequal.—Epiphytical plants with very short or, in species not Australian, elongated stems, not usually thickened into pseudobulbs. Leaves distichous, equitant. Flowers very small, in terminal pedunculate dense racemes, the pedicels short, the bracts small.

The genus is spread over tropical Asia and the Indian Archipelago, extending westward to the Mascarene islands, and eastward to the South Pacific. Of the two Australian species one has a wide range over East India and the Archipelago, the others appear to be endemic. The genus has been reunited by Reichenbach with the European *Malaxis*, from which it differs but very little in the structure of the flowers, but the vegetative characters and geographical distribution appear to be sufficient to maintain it as distinct.

Bracts ovate, fringed-ciliate. . . . . 1. *O. iridifolia.*
Bracts lanceolate, fine-pointed, entire . . . . . 2. *O. palmicola.*

1. **O. iridifolia,** *Lindl. Gen. and Sp. Orch.* 15, *and Fol. Orchid.* Leafy stems very short and thick, rarely lengthening to 1 in. Leaves 3 to 7, sometimes none of them exceeding 3 in., in other specimens above 6 in. long and rather broad. Racemes as long as or longer than the leaves, rather dense but very slender when in flower, the minute flowers more or less distinctly collected in closely approximate whorls. Bracts ovate, scarious, mostly denticulate. Pedicels at length $\frac{3}{4}$ line long. Labellum broad, more or less fringed at least at the base and often 2-lobed at the end, about $\frac{1}{2}$ line long. Sepals smaller. Capsule $1\frac{1}{2}$ to 2 lines long, prominently angled.—*Malaxis iridifolia*, Reichb. f. in Walp. Ann. vi. 208.

Queensland. Brisbane river, *F. Mueller;* Rockhampton, especially Crocodile Creek, *Bowman, Thozet, O'Shanesy, Dallachy;* also in East India and the Archipelago.

2. **O. palmicola,** *F. Muell. Fragm.* ii. 24. A small delicate almost stemless species with the habit of some of the smaller E. Indian ones.

Leaves 5 to 7, lanceolate, 1 to nearly 2 in. long. Racemes very slender, 2 to 3 in. long, the minute flowers very numerous, clustered in distinct whorls. Bracts as long as the flowers, lanceolate with fine points and often ciliate. Sepals and petals about $\frac{1}{4}$ line long, lanceolate, acute, the petals narrower than the sepals. Labellum about as long as the sepals, with 2 broad (entire ?) lateral lobes, the middle lobe rhomboidal, rather broader than long. Fruiting pedicels $\frac{1}{2}$ line long. Capsule nearly 1 line.—*Malaxis palmicola*, F. Muell. Fragm. vii. 30.

Queensland. Brisbane river, *Kellemay;* Rockhampton? *Dallachy.*
N. S. Wales. On the trunks of Palms, Hastings river, *Beckler;* Clarence river, *C. Moore;* Bellinger range, *Fitzgerald.*

3. DENDROBIUM, Swartz.

Sepals nearly equal in length, the lateral ones very obliquely dilated at the base and connate with a projection from the base of the column into a pouch or spur. Petals usually nearly the length of the upper sepal or rather longer. Labellum articulate at the end of or (in species not Australian) shortly connate with the basal projection of the column, concave at the base, with the margins gradually expanded into 2 lateral lobes usually embracing the top of the column, and a central terminal lobe usually spreading or recurved, or the lateral and terminal lobes confluent in an entire concave or spreading lamina, the disk usually bearing longitudinal raised plaits. Column not very long, winged or toothed at the top. Anther terminal, lid-like. Pollen masses 4, in collateral pairs, usually equal and free or slightly coherent.—Rhizome tufted or creeping on trees or rocks; stems elongated and branching or simple and thick, sometimes reduced to short pseudobulbs, and usually bearing both leaves and racemes or 1-flowered peduncles. Flowers often rather large and showy, rarely very small.

A large genus ranging over the warmer regions of both the New and the Old World, one species found as far south as New Zealand. Of the 24 Australian species one only has been identified with certainty with an exotic species, the *D. hispidum* of Vanikoro, in the South Pacific, although another from the same island, of which the flower is unknown, has been conjectured to be the same as the Australian *D. striolatum;* the remaining 22 appear to be strictly endemic.

Sect. 1. **Dendrocoryne.**—*Stems simple, elongated or short, bearing* 2 *or more flat or channelled leaves at or towards the end. Racemes* 1 *to* 3, *apparently terminal or nearly so, or only in the uppermost axils. (Stems more leafy with short axillary racemes in* D. agrostophyllum *and* D. Smilliæ.)

Petals obovate, broader than the sepals. Racemes few-flowered, on long peduncles. Flowers pink or lilac.
Basal pouch of the flower with a prominent spur underneath, forming a double spur.
Petals $\frac{3}{4}$ in. broad. Labellum middle-lobe very broad and obtuse . . . . . 1. *D. bigibbum.*
Petals $\frac{1}{4}$ in. broad. Labellum middle-lobe oblong-lanceolate, acute or mucronate . . . . . 2. *D. dicuphum.*
Basal pouch scarcely gibbous on the lower side . . . . . 3. *D. Sumneri.*

Petals narrower or not broader than the sepals. Flowers white, yellow, brown-red, or spotted with red.
Leaves flat. Large species. Racemes above 6 in. and often above 1 ft. long, with numerous rather large flowers.
Petals and sepals obtuse, very much undulate and spreading.
Leaves broad. Bracts ¼ to ½ in. long . . . . . 4. *D. undulatum.*
Leaves narrow. Bracts minute . . . . . 5. *D. Johannis.*
Petals and sepals lanceolate, acute, not undulate and almost connivent . . . . . 6. *D. speciosum.*
Leaves flat. Racemes under 6 in., with a slender rhachis.
Stems usually attenuate towards the base. Sepals and petals with long slender points, 3 or 4 times as long as the labellum.
Stems prominently 4-angled . . . . . 7. *D. tetragonum.*
Stems terete, many-angled . . . . . 8. *D. æmulum.*
Stems not much or not at all attenuate at the base. Sepals and petals lanceolate not above ⅓ longer than the labellum.
Central lobe of the labellum broad, almost reniform.
Flowers reddish purple. Spur conical, straight . . 9. *D. Kingianum.*
Flowers yellow. Spur short, broad and incurved . 10. *D. gracilicaule.*
Central lobe of the labellum linear-lanceolate. Spur rather long nearly straight . . . . . 11. *D. Moorei.*
Stems rather slender, leafy, with short axillary racemes. Sepals and petals broad, about as long as the labellum 12. *D. agrostophyllum.*
Leaves flat. Stems long and thick. Racemes several, short and dense. Spur very obtuse, longer than the lanceolate sepals and petals . . . . . 13. *D. Smilliæ.*
Leaves linear, channelled. Stems short. Racemes long pedunculate. Sepals and petals linear-oblong or spathulate . . . . . 14. *D. canaliculatum.*

Sect. 2. **Monophyllæa.**—*Stems tufted, short and thick, terminating in a single leaf with 1 to 3 flowers at its base.*

Leaves flat, oblong or lanceolate.
Ovary and fruit smooth . . . . . 15. *D. monophyllum.*
Ovary and fruit muricate . . . . . 16. *D. hispidum.*
Leaves very thick, ovoid-oblong, with tuberculate ribs . . . 17. *D. cucumerinum.*

Sect 3. **Rhizobium.**—*Rhizomes creeping, with scarious sheathing scales. Leaves solitary in the axils of the scales, either sessile on a broad disk or on a very short turbinate protuberance. Racemes few-flowered, also from the rhizome.*

Leaves flat, coriaceous, very acute. Sepals lanceolate, about 5 lines long without the spur . . . . . 18. *D. pugioniforme.*
Leaves very thick and fleshy, almost acute. Sepals oblong-lanceolate, about 4 lines without the pouch . . . . . 19. *D. rigidum.*
Leaves very thick and fleshy, obtuse. Sepals linear or narrow linear-lanceolate, 7 to 10 lines long . . . . . 20. *D. linguiforme.*

Sect. 4. **Strongyle.**—*Stems branched, usually rather slender. Leaves distant, terete. Racemes (few-flowered) or peduncles lateral.*

Sepals and petals narrow, 1 in. long. Spur from ¼ to near ⅓ as long. Labellum much shorter than the sepals, the middle lobe acuminate . . . . . 21. *D. teretifolium.*
Sepals and petals lanceolate, under ¾ in. Spur short, very obtuse. Labellum nearly as long as the sepals, the middle lobe ovate-oblong . . . . . 22. *D. striolatum.*

Sepals and petals narrow, about ½ in. Spur about half as long. Labellum as long as the sepals, the middle lobe acuminate . . . . . 23. *D. Mortii.*

Sepals and petals lanceolate, about ¼ in. Spur about as long. Labellum nearly as long as the sepals, the middle lobe short and broadly reniform . . . . . 24. *D. Bowmanii.*

D. complanatum, A. Cunn. in Lindl. Bot. Reg. 1839, Misc. 34, from the neighbourhood of the Brisbane river, is described as having the flattened stems and distichous leaves of the section *Aporum*, Lindl., but as the flowers were never seen, and no specimen of the foliage has been preserved for comparison, it will be impossible to identify the plant. The mention of the yellowish tinge of the foliage might lead one to suppose that it may have been the *Oberonia iridifolia*.

D. Fellowsii, F. Muell. Fragm. vii. 63, is described from very insufficient materials—the summit of a stem, with the rhachis of a few racemes from which the flowers are all fallen away with 2 loose leaves, which would all indicate the *D. Smilliæ*. Dallachy saw no plants in flower on the trees, but picked up a few yellow flowers from the ground which I cannot distinguish from those of *D. gracilicaulis*. It is very doubtful therefore whether the *D. Fellowsii* may not be a compound of these two species.

D. minutissimum, F. Muell. Fragm. v. 95, from a single locality near Botany Bay, is mentioned by name only, and I have seen no specimens.

Sect. 1. Dendrocoryne, *Lindl.*—Stems simple, elongated or short and sometimes thickened into oblong pseudobulbs, bearing 2 or more flat or channelled leaves at or near the end, the lower part with scarious thin sheathing scales which usually soon wear away, leaving annular scars. Racemes 1 to 3, apparently terminal or nearly so (owing to the arrest of the terminal shoot), or only in the upper axils.

1. **D. bigibbum,** *Lindl. in Paxt. Fl. Gard.* iii. 25, *f.* 245. Stems in the cultivated plant 6 to 8 in. long, slightly contracted towards the base, bearing in the upper part 3 or 4 lanceolate leaves of 3 or 4 in., and in the older plants swollen at the base in a short pseudobulb. Raceme apparently terminal on a peduncle of 6 to 8 in., with 3 to 10 large flowers of a deep lilac on pedicels of ¾ to 1 in. Sepals ovate or ovate-lanceolate, acute, 9 to 10 lines long and about 5 lines broad in our specimens, the lateral ones produced with the basal projection of the column into an obtuse pouch with a conical straight or curved obtuse spur on the lower side forming a double spur as in *D. bicuphum*. Petals broadly obovate almost orbicular, fully ¾ in. broad. Labellum rather shorter than the sepals, with the large lateral lobes forming the very broad base of *D. bicuphum*, but the middle lobe at least as broad as long, very obtuse or retuse and not so long as the broad base, the disk with 3 to 5 raised longitudinal lines fringed or crested from the middle upwards.—Bot. Mag. t. 4898.

Queensland. Mount Adolphus, Torres Straits, *Thomson.*—Only known from specimens cultivated by Loddiges.

2. **D. dicuphum,** *F. Muell. Fragm.* viii. 28. Stems strongly ridged and furrowed, sometimes 3 to 4 in long, rather thick, equal or scarcely contracted towards the base, sometimes shortened into a conical pseudobulb. Leaves few on the upper part of the stem, lanceolate or

linear-lanceolate, 3 to 6 in. long. Raceme erect, on an apparently terminal peduncle of 6 in. to 1 ft., with 3 or 4 (probably pink or purple) flowers, on pedicels of about ½ in. Sepals lanceolate, acutely acuminate, 7 to 8 lines long, the lateral ones forming at the base, with the basal projection of the column, a pouch as in other *Dendrobia*, but also emitting from the under side an obtuse hollow spur 1 to 1½ lines long, forming a distinctly double spur to the flower. Petals obovate, acute, rather longer and broader than the sepals, but not above 3 lines broad in our specimens. Labellum nearly as long as the sepals, attached at the junction of the 2 lobes of the spur, scarcely clawed but mobile, the broad lateral lobes forming a truncate base nearly 5 lines broad, the middle lobe oblong-lanceolate, acute or mucronate and not 2 lines broad; the disk with 3 raised longitudinal lines or plates more or less fringed or crested and extending some way along the middle lobe, and occasionally 1 or 2 shorter additional fringed lines.

N. Australia. Liverpool river, *Gulliver;* and probably the same, but our specimen without flowers, Port Darwin, *Schultz, n.* 412.

3. **D. Sumneri,** *F. Muell. Fragm.* vi. 94. Stems elongated (22 in. in the imperfect specimen), not deeply furrowed. Leaves (detached) lanceolate, 3 to 4 in. long. Raceme with its long peduncle about 8 in. long, the rhachis flexuose, with few distant pink flowers, on pedicels of 3 to 4 lines. Sepals ovate-lanceolate, acute, nearly ½ in. long, the spur not half so long, broadly conical, slightly gibbous near the base on the upper side, but not forming the double spur of *D. bigibbum.* Petals as long as the sepals, broadly obovate. Labellum shorter than the sepals, the claw very much dilated from the base and expanded into broadly obovate lateral lobes, the middle lobe rather smaller, at least as broad as long, the disk with slightly raised lines fringed with raised processes between the lateral lobes and extending very shortly on the middle lobe.

Queensland. Near Cape York, *Jardine;* a very imperfect specimen in Herb. F. Mueller.

4. **D. undulatum,** *R. Br. Prod.* 332. A stout species growing in large tufts and attaining with the racemes several ft., the stems often swollen in the middle. Leaves bifarious, ovate or elliptical, obtuse or emarginate, 2 to 4 in. long, flat but thick and somewhat undulate or the margins recurved. Racemes from the upper part of the stem often above 1 ft. long, the flowers numerous, rather large, on pedicels often exceeding 1 in. Bracts lanceolate or linear-lanceolate. Sepals and petals nearly similar, spreading, linear-oblong, obtuse, very much undulate, of a dingy brown usually bordered with yellow, about 1 in. long, the short broad basal pouch ending in a short curved or straight obtuse spur. Labellum shorter than the sepals, the lateral lobes large, erect, nearly flat, the middle lobe small, broadly lanceolate or oblong, recurved and undulate; the disk with 5 raised lines or plates of a light violet colour, of which 2 more prominent especially near the base and sometimes 7 immediately below the middle lobe. Column short.—

Lindl. Gen. and Sp. Orch. 87; Reichb. f. in Walp. Ann. vi. 298, Beitr. 47; F. Muell. Fragm. i. 87; *D. discolor*, Lindl. Bot. Reg. 1841, t. 52.

Queensland. Endeavour river, and many other places along the coast, *Banks and Solander, R. Brown, A. Cunningham;* Port Curtis, *M'Gillivray;* Curtis island, *Thozet;* Rockingham bay, *Dallachy;* Port Denison, *Fitzalan* (racemes 1½ ft. long, with above 30 flowers); Cape York, *Daemel;* Albany island, *A. C. Gregory.*

The species is said to be a native also of Java, but only on garden authority. It is not included in any enumeration of Archipelago Orchids, nor have we any extra-Australian specimen.

5. **D. Johannis,** *Reichb. f. in Gard. Chron.* 1865, 890; *Xen. Orch.* ii. 165. Very near *D. undulatum*, and perhaps a variety, differing in the much narrower acuminate leaves, in the minute bracts, and the flowers rather smaller, the undulate petals and sepals narrow, about ¾ in. long, of a uniform dull brown, the labellum yellow.—Bot. Mag. t. 5540.

Queensland? Cultivated by Veitch from Northern Australia with *D. canaliculatum* (*D. Tattonianum*). Of this I have only seen the plate quoted, and two loose flowers in Reichenbach's herbarium.

6. **D. speciosum,** *Sm. Exot. Bot.* i. 17, t. 10 (*the flowers grossly misrepresented*). Stems very thick and fleshy, 6 in. to 1 ft. high. Leaves few (2 to 5) distichous towards the apex of the stem, ovate or oblong, thick, flat or slightly undulate, 3 to 6 in. long. Racemes apparently terminal, often above 1 ft. long, the sheathing scales at the base of the peduncle 1 to 1½ in., the bracts very small, ovate or lanceolate. Flowers numerous, rather large, pale yellow, on pedicels of 1 to 2 in. Sepals and petals nearly equal, erect or slightly open, usually incurved, ¾ to 1 in. long, lanceolate but varying in breadth, the lateral ones incurved, forming with the basal projection of the column a short broad pouch. Labellum considerably shorter than the sepals, nearly white spotted with purple, the lateral lobes short and broad, the middle lobe broader than long, very obtuse or retuse. Column white, often spotted with purple.—R. Br. Prod. 332; Lindl. Gen. and Sp. Orch. 87; Reichb. f. Beitr. 48; Bot. Mag. t. 3074; Bot. Reg. t. 1610.

Queensland. Port Bowen, *R. Brown;* Brisbane river, *W. Hill;* Rockhampton, *Bowman, O'Shanesy;* Rockingham bay, *Dallachy.*

N. S. Wales. Port Jackson, *Banks and Solander, Caley, Woolls, Vicary;* northward to Hastings river, *Tozer;* southward to Cape Howe, *Walter.*

Victoria. Nangatta mountains and Genoa river, *F. Mueller.*

D. Hillii, Hook. Bot. Mag. t. 5261, as suggested by F. Mueller, Fragm. iv. 175, appears to be a slight variety of *D. speciosum*, with the sepals and petals narrower and longer than those figured t. 3074, but shorter and rather narrower than those of several other specimens.

7. **D. tetragonum,** *A. Cunn. in Bot. Reg.* 1839, *Misc.* 33. Stems from a creeping or tufted rhizome numerous, forming small pseudobulbs at the base, from 1 or 2 in. to above 1 ft. long, very prominently 4-angled, rather slender in the lower portion, thickened above the middle or near the apex. Leaves 2 or 3 near the summit of the stem, oblong or broadly lanceolate, acute, 2 to 4 in. long. Racemes above the leaves 1 or 2, short and loose, bearing each only 1 to 3 yellowish

green flowers bordered with brownish red on pedicels of ½ to 1 in. Bracts small and narrow. Sepals from a broad triangular base of ¼ in. suddenly contracted into a linear almost filiform point of 1 to nearly 1½ in. the basal spur ascending, thick and very obtuse, 2½ lines long. Petals much shorter than the sepals, linear-filiform with a slightly dilated lanceolate base. Labellum nearly ½ in. long, pale yellow streaked with narrow bands of crimson, the lateral lobes broad and prominent, the middle one larger, almost rhomboidal, shortly and acutely acuminate. Disk with 3 raised lines or narrow plates scarcely undulate, the central one more raised and alone continued on the base of the middle lobe.—Lindl. Bot. Reg. 1841, Misc. 2; Bot. Mag. t. 5956; F. Muell. Fragm. i. 87.

Queensland. Dry shaded woods, Moreton bay, *A. Cunningham;* Islands of Moreton bay, *F. Mueller;* Rockhampton, *Bowman, O'Shanesy;* Rockingham bay, *Dallachy.*

N. S. Wales. Hastings, Macleay, and Clarence rivers, *Beckler;* Tweed river, *Guilfoyle.*

8. **D. æmulum,** *R. Br. Prod.* 333. Stems terete, rather thick, sometimes tapering into a long thin base with a small pseudobulb as in *D. tetragonum.* Leaves 2 or 3 near the summit, ovate or oblong. Racemes 1 to 3 at the end between the leaves, 2 or 3 in. long, the rhachis slender, the bracts small and lanceolate. Flowers rarely above 6 in the raceme, on slender pedicels of ½ in. or less. Sepals narrow lanceolate, almost linear, often nearly 1 in. long, striate, the basal pouch or spur short and broad, turned upwards. Petals narrow-linear, as long as the sepals. Labellum scarcely above ¼ in. long, contracted into a claw at the base, the lateral lobes broad short and acute, the middle lobe recurved, ovate, much undulate, with a small acute point; the disk with 3 raised lines or plates between the lateral lobes merging into a single broad much undulate one extending to the end of the middle lobe.—Lindl. Gen. and Sp. Orch. 87; Reichb. f. Beitr. 49; F. Muell. Fragm. i. 213; Bot. Mag. t. 2906.

Queensland. Brisbane river, *Bailey.*

N. S. Wales. Port Jackson, *R. Brown;* Blue Mountains, *Miss Atkinson, Vicary;* New England, *C. Stuart;* Hastings river, *Beckler;* Richmond river, *Henderson;* Tweed river, *Guilfoyle.*

The figure above quoted from the Botanical Magazine represents the stems thicker and shorter, and the sepals and petals shorter and broader than they are in the wild specimens.

9. **D. Kingianum,** *Bidw. in Lindl. Bot. Reg.* 1844, *Misc.* 11, 1845, t. 61. Stems usually 3 to 6 in. high, striate with prominent angles, thickened at the base. Leaves at the summit of the stem 3 to 5, lanceolate or oblong-lanceolate, acute, 3 to 4 in. long. Racemes within or above the leaves 1 to 3, longer than the leaves. Flowers of a reddish purple, on pedicels of ¼ to ½ in. Bracts very small. Sepals broadly lanceolate, the lower ones much falcate, 4 lines long in some specimens, fully 5 in others. Petals about as long, but narrower. Spur conical, slightly incurved, about 3 lines long. Labellum not much shorter than the sepals, not undulate, the lateral lobes very prominent, almost oblong, obtuse, the

middle lobe scarcely longer, but very broad, almost reniform, the disk with 3 raised lines or plates extending to the base of the middle lobe, but not beyond.—Bot. Mag. t. 4527; F. Muell. Fragm. iii. 60.

Queensland. Moreton bay? *Bidwill.*
N. S. Wales. On rocks and trees, Biron, *Leichhardt;* New England, *C. Stuart.*

10. **D. gracilicaule,** *F. Muell. Fragm.* i. 179. Closely resembles *D. Kingianum* in habit, foliage and all essential characters. Leaves rather more rigid and broader than in that species, racemes shorter, and the flowers (sometimes but not always rather smaller) of a dingy yellow spotted with red, the spur or pouch shorter, broader and more curved.—*D. elongatum*, A. Cunn. in Bot. Reg. 1839, Misc. 33; Lindl. l.c. 1841, 21, but not of Lindl. Gen. et Sp. Orch. 77; *D. brisbanense*, Reichb. f. in Walp. Ann. vi. 299.

Queensland. Moreton bay, *F. Mueller.*
N. S. Wales. Macleay and Clarence rivers, *Beckler;* Lord Howe's island, *C. Moore,* and others.

11. **D. Moorei,** *F. Muell. Fragm.* vii. 29. Closely resembles *D. Kingianum* and *D. gracilicaule*, and scarcely to be distinguished from them without the flowers, which are very different. Stems 3 to 8 in. high, strongly marked with prominent angles and furrows, sometimes equally thick throughout, sometimes attenuate or thickened at the base. Leaves 2 to 4 in. long. Racemes usually exceeding the leaves, 1 or 2 at the end of the stem. Bracts lanceolate or subulate, 1 to 4 lines long. Pedicels $\frac{1}{4}$ to $\frac{1}{2}$ in. Sepals linear-lanceolate, varying in different specimens from 5 to 7 lines, besides the spur which is straight or slightly curved and 3 to 4 lines long. Petals as long as the sepals but narrower at the base. Labellum attached to the end of the basal projection of the column, with a narrow claw as long as the spur, expanded below the apex of the very short column into 2 short lateral lobes, the middle lobe linear-lanceolate, complicate, not undulate, at least $\frac{2}{3}$ as long as the sepals; disk with slightly raised lines only between the short lateral lobes.

N. S. Wales. Trees and rocks, Lord Howe's island, *C. Moore, Eclipse Expedition.*

12. **D. agrostophyllum,** *F. Muell. Fragm.* viii. 28. Stems about 1 ft. high, rather slender, leafy from the middle upwards. Leaves lanceolate, rather thin, 2 to 3 in. long. Racemes axillary and distant, the rhachis not 1 in. long. Flowers yellow, on pedicels of about $\frac{1}{2}$ in. Sepals broadly lanceolate or the dorsal one oblong, about 4 lines long. Petals obovate-oblong, as long as the sepals. Labellum sessile, nearly 5 lines long and broad and almost square, the lateral lobes obliquely rhomboidal, separated by a narrow sinus from the terminal one, which is more than twice as broad as long; the disk with a raised plate or callus along the centre below the middle.

Queensland. Rockingham bay, *Dallachy.*

13. **D. Smilliæ,** *F. Muell. Fragm.* vi. 94. Stems 1 to 2 ft. long, thick, very prominently angled and furrowed, some of the specimens marked only with the annular scars of the scarious sheathing scales, others with the short persistent sheaths of fallen leaves. Leaves oblong or lanceolate, 2 to 4 in. long. Racemes from the uppermost nodes 2 to 3 in. long, the flowers "crimson tipped with green," crowded almost from the base on pedicels of 3 to 6 lines. Bracts very small. Sepals ovate-lanceolate, not 3 lines long without the spur, which is 4 or 5 lines long, straight, somewhat dilated towards the end and very obtuse. Petals rather smaller than the sepals. Labellum with a long broad claw, expanded at the apex into a concave complicate almost hood-shaped lamina, shorter than the sepals, broader than long, entire or broadly and shortly 2-lobed. Pollen-masses of the genus, closely cohering in pairs.

Queensland. Rockingham bay, *Dallachy.*—The species is evidently closely allied to the *D. viridiroseum*, Reichb. f., described from garden specimens said to have been brought from Java, which, however, has more acute sepals and a somewhat differently shaped labellum.

14. **D. canaliculatum,** *R. Br. Prod.* 333. Stems or pseudobulbs usually rather thick and not above 1 to 2 in. high. Leaves at the summit 2 to 6, linear, thick, almost semicylindrical but grooved on the upper side, 4 to 8 in. long, often 3 lines broad at the base but tapering to the end. Racemes in the upper axils often a foot long including the peduncle, but flowering only in the upper portion, the rhachis slender, the sheathing scales of the peduncle small, the bracts still smaller. Pedicels slender, $\frac{1}{2}$ to $\frac{3}{4}$ in. long. Sepals and petals linear, white tipped with yellow, the sepals 5 or 6 lines long, the lateral ones slightly falcate and produced at the base with the basal projection of the column into a conical spur. Petals rather longer than the sepals and contracted at the base. Labellum about $\frac{2}{3}$ the length of the sepals, with 3 lobes of a rich mauve colour, the lateral ones prominent and obtuse, the middle one nearly orbicular or rather broader than long, with a short point, the disk with 3 prominently raised lines or plates, much undulate between the lateral lobes and ending on the middle lobe in richly coloured nearly orbicular laminæ.—Lindl. Gen. and Sp. Orch. 91; Reichb. F. Beitr. 49; F. Muell. Fragm. iii. 126; *D. Tattonianum*, Batem. in Gard. Chron. 1865, 890; Bot. Mag. t. 5537.

Queensland. Endeavour river, *Banks and Solander;* Rockingham bay, *Dallachy.* "Flowers fragrant."—There are no specimens preserved of Banks and Solander's plant, but from the drawing in the British Museum there is no doubt of its identity with *D. Tattonianum*, although the colour of the flowers is rather duller.

Sect. 2. Monophyllæa.—Stems usually numerous, short and thick, terminating in a single leaf, with 1 to 3 flowers also at the apex of the stem at the base of the leaf.

15. **D. monophyllum,** *F. Muell. Fragm.* i. 189. Stems from a creeping rhizome numerous, erect, thick, narrow-conical, 1 to 2 in. long, with very prominent ribs and furrows, at least when dry. Leaf

apparently terminal, oblong or lanceolate, flat, 2 to 3 in. long. Raceme also solitary and apparently terminal, about as long as the leaf, with 2 or 3 "yellow" flowers on pedicels of 3 or 4 lines. Bracts minute. Sepals broadly lanceolate, acute, about 3 lines long, besides the broad obtuse spur about 2 lines long and slightly curved upwards. Petals as long as the sepals but narrower especially at the base. Labellum "deep yellow," nearly as long as the sepals, the lateral lobes small, the middle one broadly triangular or almost rhomboidal and obtuse; the disk without raised lines below the lobes, but 1 or 3 raised calli between the lateral lobes, sometimes produced into short undulating raised lines or plates on the middle lobe.—*D. tortile*, A. Cunn. in Lindl. Bot. Reg. 1839, Misc. 33, name only, not *D. tortile* Lindl. from Moulmein.

Queensland. On the upper branches of lofty trees, Brisbane river, Moreton bay, *A. Cunningham, W. Hill;* Glasshouse Mountains, *Beyerley.*
N. S. Wales. Richmond and Clarence rivers, *Beckler.*

16. **D. hispidum,** *A. Rich. Sert. Astrol.* 13, t. 5. A dwarf plant forming dense tufts. Stems usually from under 1 in. to nearly 2 in. high, not thickened at the base, formed of only 2 or 3 internodes with membranous scarious sheaths. Leaf apparently terminal, oblong or lanceolate, prominently keeled underneath, 1 to 2 in. long. Pedicels at the base of the leaf 1 or 2, slender, 1 to 2 lines long. Ovary densely muricate with bristly processes. Sepals ovate, obtuse, about 1½ lines long besides the spur which is about as long as the free part, the dorsal sepal rather narrower. Petals linear, as long as the sepals. Labellum as long as the sepals, the lateral lobes rather broad, the middle lobe at least as broad as long, with raised wrinkles on its surface but no raised lines on the disk between the lateral lobes. Capsule echinate, ovoid or globular, about 3 lines diameter.—F. Muell. Fragm. vii. 30.

Queensland. On trees, Rockingham bay, *Dallachy.*—Our specimens are in fruit only, but a somewhat withered flower in Herb. F. Mueller shows precisely the structure figured by A. Richard, from the original specimens gathered in the island of Vanikoro.

17. **D. cucumerinum,** *Lindl. Bot. Reg.* 1842, *Misc.* 58; 1843, t. 37. A dwarf species like the two preceding, the tufted stems not exceeding 1 in., with prominent ribs and furrows and annular scars of the sheathing scales. Leaf terminal, ovoid-oblong, fleshy and about as thick as the stem, above 1 in. long, marked with longitudinal raised tuberculate ribs and assuming the aspect of a little cucumber. Pedicels 1 to 3 at the base of the leaf and rather shorter. Sepals and petals yellowish-white, streaked with a reddish-yellow, about ½ in. long. Spur short and conical. Labellum shorter than the sepals, the lateral lobes prominent, almost acute, the middle lobe ovate, shortly acuminate, recurved, with undulate-crisped margins; the disk with 3 or 5 longitudinal raised lines or plates, even between the lateral lobes, much undulate on the middle lobe.—Bot. Mag. t. 4619; F. Muell. Fragm. iii. 59.

N. S. Wales. On *Casuarina* trees near Brownlow hill, Camden, *Woolls*, according to a memorandum received from F. Mueller.—I have seen no specimen; the above character is taken from Lindley's figure and descriptions.

Sect. 3. Rhizobium, *Lindl.*—Stems or rhizomes creeping, with scarious sheathing scales. Leaves solitary in the axils of the scales, either sessile on a broad disk or on a very short turbinate protuberance (a rudimentary stem or pseudobulb). Racemes few-flowered, also from the rhizome.

18. **D. pugioniforme,** *A. Cunn. in Lindl. Bot. Reg.* 1839, *Misc.* 33. Stems or rhizomes rather slender, much-branched, creeping and rooting at the nodes and covered when young by the scarious sheathing scales. Leaves articulate on a very short turbinate protuberance in the axils of the scales, ovate or ovate-lanceolate, tapering into a rigid point, flat but thick and rigid when dry, with the veins scarcely visible, ¾ to nearly 2 in. long. Racemes probably short and few-flowered from the remains of the rhachis, for the flowers only seen detached in Cunningham's specimens. Sepals lanceolate, about 5 lines long without the spur, which is straight, obtuse, about 3 lines long. Petals linear, as long as the sepals. Labellum nearly as long as the sepals, rather narrow to above the middle, then expanded into a broadly ovate-triangular acute recurved lamina, very much undulate but scarcely 3-lobed; the disk with 3 raised lines or plates, even on the claw, much undulate on the lamina.—*D. pungentifolium,* F. Muell. Fragm. i. 189.

Queensland. Brisbane river, Moreton bay, *F. Mueller;* Mount Lindsay, *W. Hill.* **N. S. Wales.** Blue Mountains, *Woolls, Miss Atkinson;* Hastings river, *Beckler;* New England, *C. Stuart;* southward to Illawarra, *A. Cunningham, Shepherd.*

19. **D. rigidum,** *R. Br. Prod.* 333. Stems or rhizomes shortly creeping, the young shoots covered by the membranous scarious sheathing scales. Leaves apparently closely sessile on a broad base as in *D. linguiforme,* and similarly very thick fleshy and nerveless, mostly 1 to 1½ in. long, oblong and almost acute but not nearly so much so as in *D. pugioniforme.* Raceme about as long as the leaves, the one figured bearing 3 flowers about 5 lines long including the broad obtuse pouch. Sepals "greenish white tinged with red," the dorsal one broadly lanceolate, the lateral ones very broad below the middle; petals as long as the sepals apparently narrow-oblong, "buff-coloured edged with red." Labellum as long as the sepals, the precise form not known.—Lindl. Gen. and Sp. Orch. 85.

Queensland. Endeavour river, *Banks and Solander.*—Only known from a drawing in the British Museum, the original sketch, evidently taken at the time, accompanied by pencil notes in Solander's handwriting.

20. **D. linguiforme,** *Swartz in K. Akad. Stockh. N. Handl.* 1800, 247. Stems or rhizomes closely creeping and rooting at the nodes, rather thick and fleshy, the membranous scarious sheathing scales completely covering the young shoots. Leaves articulate on broad circular scars or scarcely raised disks at the axils of the sheaths, ovate or oblong, mostly under 1 in. long, but very thick and fleshy. Racemes from the rhizomes 2 or 3 in. long, with a slender rhachis, bearing from 6 or even fewer to above 20 flowers on filiform pedicels of 3 to 5 lines. Bracts

Tab. VI.

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Dendrobium Milligani. F.M.

minute and scale-like. Sepals narrow linear-lanceolate, 7 to 10 lines long, the pouch or spur short broad and turned upwards. Petals narrow-linear, about the length of the sepals. Labellum under 3 lines long, much contracted at the base, the lateral lobes rather broad prominent and obtuse, the middle lobe longer, narrow-ovate, obtuse, the disk with 3 very prominent raised lines or plates, even between the lateral lobes, all three produced and much undulate on the middle lobe.—Sm. Exot. Bot. i. 19 t. 11; R. Br. Prod. 333; Lindl. Gen. and Sp. Orch. 85; Reichb. f. Beitr. 51.

Queensland. Mountains near Brisbane, *Dallachy;* Moreton bay, *W. Hill.*
N. S. Wales. Port Jackson to the Blue Mountains, *Culey* and many others; Hastings river, *Beckler;* Clarence river, *Wilcox;* Durval, *Leichhardt;* New England, *C. Stuart;* Port Macquarrie, *Tozer.*

Sect. 4. Strongyle, *Lindl.*—Stems elongated, branched, usually rather slender. Leaves distant, terete. Racemes few-flowered or 1-flowered, peduncles lateral.

21. **D. teretifolium,** *R. Br. Prod.* 333. Stems clustered on a creeping rhizome, elongated, terete, divaricately branched. Leaves few, terminating the branches or clasping the stem, from 3 in. to 1 ft. long in the typical form and 1 to 2 lines thick, straight or curved. Racemes lateral, often branched, very loose, with few white flowers on almost filiform peduncles of ½ to 1 in. Sepals linear-subulate, above 1 in. long, the lateral ones dilated at the base into a conical obtuse spur of 2 to 3 lines. Petals linear-filiform, as long as or slightly longer than the sepals. Labellum about half as long as the sepals, lanceolate, canaliculate, acuminate and recurved, the lateral lobes very small, the disk dotted with red and bearing 3 undulate raised lines or plates. Column dotted with red.—Lindl. Gen. and Sp. Orch. 91; F. Muell. Fragm. i. 89; Reichb. f. Beitr. 51; Endl. Iconogr. t. 99; Bot. Mag. t. 4711; *D. calamiforme,* Lodd. in Lindl. Bot. Reg. 1841, Misc. 9.

Queensland. Rockhampton, *O'Shanesy, Bowman.*
N. S. Wales. Port Jackson, *R. Brown;* Hastings and Clarence rivers, *Beckler, Wilcox;* Port Macquarrie, *Backhouse;* Richmond river, *Henderson;* New England, *C. Stuart.*

D. Fairfaxii, F. Muell. in Sydney Mail, Sept. 21, 1872, 360, with a woodcut, from Mount Tomah, appears to be a slight variety of *D. teretifolium* with leaves 1 to 2 ft. long and some slight differences in the spotting and undulations of the labellum. The flowers are also described as more numerous but not so figured.

22. **D. striolatum,** *Reichb. f. in Hamb. Gartenz.* 1857, 313, *and Xen. Orchid.* ii. 24, t. 109. Stems from a creeping rhizome often elongated as in *D. teretifolium,* but the branches not so divaricate. Leaves terminal or distant, terete, straight or more frequently curved, fleshy, 1 to 3 or even 4 in. long. Peduncles usually solitary and 1-flowered, rarely bearing 2 flowers on pedicels of ½ in. Sepals and petals white with 3 to 5 dark-coloured striæ towards the base; the sepals lanceolate, 8 to 9 lines long including the short basal pouch or spur of the lateral ones, the dorsal sepal rather narrower and the petals still narrower. Label-

lum rather shorter than the sepals, dilated in the middle into 2 broad lobes, the middle lobe ovate-oblong, recurved, the margins undulate-crisped, the disk with 3 undulate longitudinal raised lines or plates. Column white, the margin of the apex more or less 2- or 3-lobed.—*D. teretifolium*, Lindl. Bot. Reg. 1839, Misc. 32, not of R. Br.; *D. Milligani*, F. Muell. Fragm. i. 88, t. 6; Hook. f. Fl. Tasm. ii. 373.

N. S. Wales. Blue Mountains, *Vicary, Miss Atkinson;* Cape Howe, *Walter.*
Victoria. Rocks along the Genoa river, *F. Mueller.*
Tasmania. On rocks Flinders island, Streletzky's Peak, &c., *Milligan, Ricketts, Story.*

Some specimens from Hastings river and from Maryborough are referred to this species in Herb. F. Mueller, but having no flowers it cannot be determined whether they belong to this or to the following species. *D. schœninum*, Lindl. in Paxt. Fl. Gard. i. 134 (name only) is represented in Herb. Lindl. by a single flower which appears to be a slight variety of *D. striolatum*, with the sepals somewhat acuminate.

23. **D. Mortii,** *F. Muell. Fragm.* i. 214 *and* ii. 93 (partly). Stems elongated and branched as in *D teretifolium* but much more slender. Leaves also more slender and somewhat 4-angled when dry, 2 to 6 in. long. Peduncles mostly 1-flowered. Sepals narrow-lanceolate, acuminate, about ½ in. long besides the spur which is 2 to 3 lines long. Petals much narrower. Labellum the length of the sepals, the lateral lobes broad, the middle lobe acuminate. Column short.

N. S. Wales. Hastings river, *Beckler;* Macleay river, *Fitzgerald;* New England, *C. Stuart.*

D. Beckleri, F. Muell. Fragm. v. 95, and vii. 59, seems to me to be precisely the same as the plant originally described by him as *D. Mortii*, although the flowers described in Fragm. ii. 93 must have been from one of Bowman's Bersaker Range specimens, which appear to me to be specifically distinct.

24. **D. Bowmanii,** *Benth.* Stems elongated and branched, more slender than in *D. teretifolium* but not so much so as in *D. Mortii*. Leaves terete, 2 to 4 in. long. Flowers apparently white, generally 2 together on a very short common peduncle, the slender pedicels not above 3 or 4 lines long. Sepals lanceolate as in *D. striolatum*, but the spur nearly as long as the remainder of the sepal, each about 3 lines long. Petals rather narrower. Labellum nearly as long as the sepals, the lateral lobes broad, the middle lobe broadly reniform, undulate crisped and slightly notched, the disk with longitudinal undulate raised lines or plates.—*D. Mortii*, F. Muell. Fragm. ii. 93, at least as to the flowers, but not the original *D. Mortii*, F. Muell. Fragm. i. 214.

Queensland. On trees and rocks, Rodd's bay, *A. Cunningham;* Bersaker Range and Port Cooper, *Bowman.*

4. BOLBOPHYLLUM, Thou.

Sepals erect, free, acuminate, nearly equal, the lateral ones obliquely dilated at the base and connate with the basal projection of the column into a pouch or short spur. Petals usually much smaller than the sepals. Labellum articulate at the end of the basal projection of the column, usually entire and contracted into a claw. Column very short,

produced below its insertion, the apex with 2 teeth or horns in front. Anther terminal, lid-like. Pollen masses 4, connate or cohering in pairs, without any gland or caudicle.—Herbs with a creeping rhizome usually covered with thin scarious sheathing scales. Leaves solitary or 2 together on small pseudobulbs. Racemes on 1-flowered peduncles issuing, like the pseudobulbs, from the axils of the sheathing scales of the rhizome.

The genus is spread over the tropical and subtropical regions of the Old World, one species found as far south as New Zealand. The Australian species appear to be all endemic.

Pseudobulbs reduced to a small scarcely prominent disk. Leaves small, ovoid-globular, succulent. Peduncles 1-flowered . . 1. *B. lichenastrum.*
Pseudobulbs oblong. Leaves linear or lanceolate, succulent, without any midrib. Peduncles 1-flowered.
Leaves linear-lanceolate, 3 to 5 in. long. Peduncle 1 to 1½ in. long . . . . . 2. *B. nematopodum.*
Leaves linear, very thick and fleshy, 1 to 2 in. long. Peduncle 2 to 4 lines long, with distant bracts . . . . . 3. *B. Shepherdi.*
Leaves oblong or lanceolate, 1½ to 3 in. long. Peduncle scarcely 2 lines long, with loosely overlapping bracts . . 4. *B. aurantiacum.*
Pseudobulbs ovoid, very deeply wrinkled. Leaves oblong or lanceolate, with a prominent midrib. Peduncles with a raceme of several flowers.
Peduncles filiform, 1 to 2 in. long. Sepals 2 to 2½ lines long, all equal . . . . . 5. *B. exiguum.*
Peduncles 3 to 6 in. long. Lateral sepals ¾ in., the dorsal one much shorter . . . . . 6. *B. Elisæ.*

1. **B. lichenastrum,** *F. Muell. Fragm.* vii. 60. Creeping rhizomes forming very dense patches. Pseudobulbs reduced to a small scarcely prominent circular disk, surrounded by the long fringed remains of the scarious sheath. Leaves thick, fleshy, ovoid or almost globular, 2 to 3 lines diameter, irregularly rugose when dry. Flowers very small, "yellow," solitary on peduncles or scapes 2 to 3 lines long, with 1 or 2 scarious sheaths at their base and apparently articulate below the flower. Sepals ovate-lanceolate, about 1 line long, besides the spur, which is broad, obtuse, 1½ lines long. Petals lanceolate, very much narrower, but not much shorter than the sepals. Labellum from the end of the basal projection of the column, with a narrow channelled erect claw, the lamina rather thick, obovate-oblong, obtuse, recurved, nearly as long as the sepals.

Queensland. On rocks and stones, Seaview Range, Rockingham bay, *Dallachy.*

2. **B. nematopodum,** *F. Muell. Fragm.* viii. 30. Creeping rhizomes apparently short and dense. Pseudobulbs closely imbricate, oblong-conical, about ½ in. long. Leaves solitary, linear-lanceolate, flat but thick and succulent, 3 to 5 in. long, 3 to 5 lines broad, attenuate towards the base, without any prominent midrib. Flowers sent by the collector detached, on filiform peduncles of 1 to 1½ in. slightly thickened at the base, very narrow and acute. Flowers yellow, the sepals about 4 lines long, the dorsal one rather shorter than the lateral ones; petals linear-subulate, about 1 line long. Labellum scarcely 1½ lines long,

abruptly contracted into a short claw, the lamina nearly hastate. Column very short, with two narrow erect teeth.

Queensland. Rockingham bay, *Dallachy.*

3. **B. Shepherdi,** *F. Muell. Fragm.* iii. 40. Creeping rhizomes not very intricate, but extending to a considerable breadth, the scarious sheathing scales very conspicuous. Pseudobulbs narrow, 2 to 3 lines long. Leaves solitary, linear, very thick and fleshy, channelled above, convex underneath but not keeled, 1 to 2 in. long. Peduncles 1-flowered, filiform, 2 to 4 lines long, usually with 1 or 2 sheathing scales at the base and 1 similar bract distant from them under the flowers. Sepals about 2 lines long, the lateral ones with a broadly ovate base adnate to the projection of the column and abruptly contracted upwards into a narrow point; dorsal sepal broadly lanceolate at the base and more gradually tapering into the point. Petals ovate-triangular, scarcely above ½ line long. Labellum shorter than the sepals, lanceolate, recurved, channelled above, contracted into a slender claw. Column with 2 subulate teeth.—*Dendrobium Shepherdi*, F. Muell. Fragm. i. 190; *B. Schillerianum*, Reichb. f. in Otto, Hamb. Gartenz. 1860, 423 referred by him to *B. Shepherdi*, in Xen. Orchid. ii. 166 and Beitr. 52.

N. S. Wales. Blue Mountains, *Miss Atkinson, Woolls;* northward to Hastings, Macleay, and Clarence rivers, *Beckler.* Hunter's river, *Leichhardt;* southward to Illawarra, *Shepherd;* and probably the same species from Grose river, *R. Brown;* the specimen has no flower, but thick oblong fleshy leaves of about 1 in., and a single capsule.

4. **B. aurantiacum,** *F. Muell. Fragm.* iii. 39. Nearly allied to *B. Shepherdi*, but a stouter plant. Pseudobulbs small and ovoid. Leaves oblong or oblong-linear, thick but flat, contracted at the base, 1½ to 3 in. long and often ½ in. broad. Peduncles 1-flowered, rarely 2 lines long, covered by the loose scarious sheathing bracts which, although only 2 or 3, overlap each other. Flowers smaller even than in *B. Shepherdi*, but similar in structure, showing however a more decided angle or spur at the end of the basal projection of the column.—*Dendrobium aurantiacum*, F. Muell. Fragm. vii. 98.

Queensland. Moreton bay, *W. Hill;* on trees and rocks about Rockhampton, *Bowman, O'Shanesy.*

N. S. Wales. Narvoo falls, Macleay river, *Fitzgerald.*

The flowers are in some specimens rather crowded on the rhizomes, a fragment of which without leaves led to the mistake of describing the inflorescence as a thyrsoid spike.

5. **B. exiguum,** *F. Muell. Fragm.* ii. 72. Creeping rhizomes "forming a carpet covering large masses of rock." Pseudobulbs ovoid or nearly globular, fleshy angular and furrowed when fresh, very deeply rugose when dry, 2 to 3 lines diameter. Leaves solitary on the pseudobulbs, oblong-linear or lanceolate, contracted at the base, ½ to 1½ in. long, the margins recurved, the midrib prominent underneath. Peduncles filiform, 1 to 2 in. long, bearing 2 to 4 flowers on short filiform pedicels. Sepals lanceolate, 2½ lines long, the lateral ones dilated at the base

F. Schoenfeld del. lith. F. Mueller direxit. H. G. De Gruchy & Co. Lith.

Cirrhopetalum Elisae F.M.

into a short broad pouch. Petals scarcely half as long as the sepals. Labellum nearly as long as the sepals, linear, thick and channelled, tapering and slightly recurved towards the end.—*Dendrobium exiguum*, F. Muell. Fragm. v. 95.

N. S. Wales. Blue Mountains, *Caley, Woolls;* northward to Hastings river, *Beckler;* Richmond and Tweed rivers, *C. Moore;* Bellinger ranges, *Fitzgerald;* southward to Illawarra, *A. Cunningham.*

Var.? *Dallachyi.* Pseudobulbs rather larger and more ovoid. Flowers white, the sepals and labellum rather broader than in the N. S. Wales specimens and the petals rather larger, but the specimens imperfect.

Queensland. Rockingham bay, *Dallachy.*

The species is very closely allied to the New Zealand *R. pygmæus*, but that has depressed-globular pseudobulbs and apparently differently shaped flowers, with a more prominent spur or pouch.

6. **B. Elisæ,** *F. Muell. Fragm.* vi. 120. Rhizome shortly creeping. Pseudobulbs ovoid, very deeply wrinkled and furrowed when dry, usually about ½ in. long. Leaves solitary, narrow-oblong, contracted at the base, mostly 1 to 2 in. long, the midrib prominent underneath as in *P. exiguum*. Racemes including the peduncle 6 to 8 in. high. Flowers much larger than in the preceding species, numerous, white tinged with pink, all turned to one side, on pedicels of 1½ to 3 lines. Bracts small and narrow. Lateral sepals linear-lanceolate, ½ to ¾ in. long, the oblique base adnate to the basal projection of the column forming a short pouch; dorsal sepal not half so long as the lateral ones; petals still shorter, ovate-lanceolate. Labellum purple, about 2 lines long, with a very short broad concave claw, the lamina erect or spreading, oblong, thick and fleshy, grooved on the upper surface. Column short, with 2 prominent teeth.—*Cirrhopetalum Elisæ*, F. Muell. Fragm. vi. 120, t. 57.

N. S. Wales. Blue Mountains, *C. Moore;* Vale of Clwyd, *Vicary;* Clarence river, *Beckler;* New England, *C. Stuart.*—Although technically approaching *Cirrhopetalum* in the shortness of the dorsal sepal, this has not the peculiar inflorescence and habit of that genus, nor yet all its essential characters.

5. PHREATIA, Lindl.

(Plexaure, *Endl.*)

Sepals nearly equal, erect or connivent, the lateral ones dilated at the base and adnate to the basal projection of the column, forming a short pouch. Petals usually smaller than the sepals. Labellum articulate on the basal projection of the column, contracted and concave at the base, the lamina spreading and entire. Column very short, shortly produced at the base, the membranous margin of the apex entire. Anther lid-like, 2-celled. Pollen-masses 8, waxy, slightly cohering by a viscid substance.—Epiphytical herbs, with short leafy stems sometimes thickened into pseudobulbs. Leaves flat or canaliculate, distichous, their persistent bases loosely imbricate. Flowers usually minute, on exceedingly short pedicels, in axillary racemes.

The genus is spread over the Indian Archipelago and the South Sea Islands. The only Australian species is also found in Norfolk island.

1. **P. limenophylax,** *Reichb. f. in Bonplandia* 1857, 54 (*partly*). A dwarf plant, the very short stem covered by the persistent bases of the leaves. Leaves linear, thick and semiterete, channelled on the upper side, 1 to 2 in. long, the dilated base 3 or 4 lines broad. Flowers very minute, yellow, rather crowded and almost sessile, in axillary racemes about as long as the leaves. Sepals about ¼ line long, rather broad, acute, the petals rather smaller and narrow. Labellum nearly as long as the sepals, very concave at the base, the lamina spreading, ovate-rhomboidal, entire, the disk with a longitudinal raised line not extending on the lamina. Capsule almost sessile or very shortly pedicellate, ovoid-oblong, about 1 line long.—*Plexaure limenophylax*, Endl. Prod. Fl. Norf. 30; *Oberonia crassiuscula*, F. Muell. Herb.; *Eria limenophylax*, Reichb. f. Xen. Orch. ii. 97, t. 130.

Queensland. On the barks of trees, Rockingham bay, *Dallachy*.—This species is also in Norfolk island. I have not seen the pollen-masses in the Australian specimens the flowers being all too far advanced, but the whole plant, the flowers in every particular, including the anther-cases, agree so perfectly with the detailed analytical drawing of Bauer, of which there is a tracing in Herb. Lindl., that I have no hesitation in referring it to the same species. Reichenbach reduces *Phreatia* to *Eria*, but Lindley does not assent to the union. Lindley appears also to have confounded this species with a South Sea island one which has flat leaves; and Reichenbach by some mistake places the *P. limenophylax* in his group headed "foliis papyraceis;" the leaves are, however, figured by Bauer, and specially described by Endlicher as "carnosula, connato-plicata, intus sulco longitudinali notata," precisely as in the Australian specimens.

6. PHOLIDOTA, Lindl.

Flowers subglobose. Sepals nearly equal, free. Petals smaller. Labellum sessile at the base of the column, concave or almost saccate at the base, entire or 3-lobed, the lateral lobes erect, the middle lobe recurved. Column erect, somewhat hood-shaped at the top and winged in front. Anther terminal, lid-like, 2-celled, the valves almost transverse. Pollen-masses 4, waxy, globular, without any caudicle.—Epiphytical herbs, the rhizome usually shortly creeping, bearing short flowering stems or pseudobulbs, with a single terminal leaf. Flowers rather small, in terminal pedunculate racemes usually recurved. Bracts often rather broad and imbricate in the young raceme.

The genus is spread over East India and the Archipelago, the only Australian species ranging over the greater part of the area of the genus.

1. **P. imbricata,** *Lindl. in Hook. Exot. Fl.* ii. t. 138; *Gen. and Sp. Orch.* 36. Stems short, with a few sheathing scales and a single leaf, the older stems thickened into pseudobulbs. Leaf broadly lanceolate or oblong, acuminate, contracted and convolute at the base, prominently ribbed, often above 1 ft. long. Peduncle long and slender from within the convolute base of the leaf, the flowering part at length recurved and 6 in. long or more. Bracts broadly ovate, obtuse or almost acute, 4 to 5 lines long, complicate and imbricate at first, spreading from the

flexuose rhachis when the flowers are out. Pedicels about 3 lines long. Sepals ovate-lanceolate, about 3 lines; petals rather smaller. Labellum about as long as the sepals, the concave almost globular part erect, bordered by the short broad lateral lobes, the middle lobe broader than long, the margin undulate and more or less distinctly 3-lobed. Column about 1½ lines long, the margins winged upwards. Capsule obovate, about ½ in. long.—Bot. Reg. t. 1213; Wight Ic. t. 907; F. Muell. Fragm. iv. 163.

Queensland. Rockingham bay, *Dallachy*.—This species is common in E. India and the Archipelago, the Australian specimens differing slightly in the rather larger bracts. Dallachy describes the flowers as yellow.

Tribe 2. Vandeæ.—Anther lid-like, incumbent, usually deciduous. Pollen-masses waxy, 4 in pairs, on a single or double caudicle attached to a gland. Epiphytes, or terrestrial with creeping rhizomes.

7. TÆNIOPHYLLUM, Blume.

Sepals and petals nearly equal, erect or connivent, connate at the base. Labellum adnate to the column at the base and produced into a short spur or pouch, entire (or shortly 2-lobed?). Column very short, erect, with 2 teeth in front. Anther terminal, lid-like. Pollen-masses 4 in 2 pairs, with a short slender caudicle. Gland minute.—Epiphytical herbs, almost stemless and leafless or with a tuft of linear leaves. Flowers minute, in small slender racemes.

The genus has been found also in Java and in Ceylon; the Australian species is probably endemic.

1. **T. Muelleri,** *Lindl. Herb.* Stems leafless, scarcely above ½ line long, emitting long linear wavy roots, and 2 or 3 filiform scapes of about ½ in. Bracts minute. Flowers 2 or 3 on exceedingly short pedicels, and the whole flower under 1 line long. Sepals and petals united to about the middle, the petals rather narrower than the sepals. Labellum linear, as long as the sepals, and in the only flower I could examine appeared to be shortly 2-lobed at the end, with a minute tooth between the lobes, the basal pouch or spur obtuse, about ¼ line long.—*Sarcochilus Baileyi*, F. Muell. Herb.

Queensland. On trees near Brisbane, *W. Hill, C. Prentice, Bailey.*

8. SARCOCHILUS, Br.

(Thrixspermum, *Lour.*; Gunnia, *Lindl.*)

Sepals and petals nearly equal, free, spreading, the lateral sepals often more or less dilated at the base and adnate to the basal projection of the column. Labellum articulate at the end of the basal projection of the column without any spur at its base, 3-lobed, the lateral lobes rather large, the terminal one (in the Australian species) very short and tooth-like or cushion-like, with a solid fleshy dorsal protube-

rance at its base sometimes elongated oblong or conical, sometimes very short; the disk between the lateral lobes with prominent callosities. Column short, erect, produced at the base. Anther terminal, lid-like. Pollen-masses 4 in pairs on a somewhat flattened caudicle.—Epiphytical herbs. Stems short, either covered with the prominent persistent truncate bases of the leaves or leafless. Leaves flat and often falcate, or narrow-linear, or none. Racemes axillary. Bracts small. Capsules usually linear or narrow-oblong.

The genus is spread over East India and the Archipelago, with one New Zealand species, but the Australian ones appear to be all endemic. Reichenbach having identified Loureiro's *Thrixspermum* as a species of *Sarcochilus* has adopted his generic name as the oldest, and as being sufficiently characterized. But the composition of the word is against all rules, and the character given (the fleshy middle lobe of the labellum longer than the lateral ones) will certainly not apply to the Australian species. We cannot therefore admit that this barbarous name of *Thrixspermum* should now be substituted for the universally received one of *Sarcochilus*, nor can we correct it according to the rules of etymology without interfering with *Trichospermum*, Blume, in *Tiliaceæ*.

Leaves oblong, lanceolate or falcate. Middle lobe of the labellum short and toothlike, glabrous.
- Lateral sepals adnate to the base only of the projection of the column which represents a claw to the labellum.
  - Sepals and petals narrow-linear, subulate-acuminate, 1 to 1¼ in. long . . . . . 1. *S. divitiflorus.*
  - Sepals and petals oblong, 6 to 7 lines long . . . . . 2. *S. falcatus.*
- Lateral sepals adnate to the whole of the projection of the column.
  - Sepals (5 to 6 lines) twice as long as the labellum.
    - Sepals and petals oval-oblong . . . . . 3. *S. Fitzgeraldi.*
    - Sepals and petals linear-oblong . . . . . 4. *S. olivaceus.*
  - Sepals (about 5 lines) but little longer than the labellum 5. *S. parviflorus.*

Leaves narrow-linear or none. Middle lobe of the labellum broad or cushionlike and densely covered with a white pubescence (*Chiloschista*).
- Leaves linear. Lateral sepals adnate to the whole of the projection of the column.
  - Sepals nearly 3 lines long. Lateral lobes of the labellum much longer than the middle lobe and the dorsal protuberance . . . . . 6. *S. Ceciliæ.*
  - Sepals about 1½ lines. Lateral lobes of the labellum shorter than the broad middle lobe and the spurlike dorsal protuberance . . . . . 7. *S. Hillii.*
- No leaves. Lateral sepals (about 2 lines) adnate only to the base of the projection of the column which represents a claw to the labellum . . . . . 8. *S. phyllorhizus.*

1. **S. divitiflorus,** *F. Muell. Herb.* Stems unknown. Leaves oblong, 3 to 4 in. long and nearly 1 in. broad, flat with prominent nerves. Scape or peduncle about 6 in. long, flowering from below the middle, with a few empty sheathing scales or bracts below the inflorescence. Flowers much longer than in any other species, not very crowded, on short pedicels, the subtending bracts ovate, 1 to 1½ lines long. Sepals and petals very narrow, tapering into a filiform point, 1 to 1¼ in. long, apparently pale yellow or white with dark blotches near the base, the lateral sepals narrow-lanceolate towards the base, but

without any prominent spur or point. Labellum with a narrow claw of about 1 line, the lamina with an erect central saccate lobe of about 1 line, the lateral lobes twice as long, oblong, obtuse, clasping the very short column. Pollen-masses 2 on a short caudicle, the pollen somewhat mealy.

N. S. Wales. Macleay river, *Fitzgerald.*—I have only seen racemes and loose leaves of this remarkably distinct species. The flowers at first sight resemble those of *Dendrobium teretifolium*, but the structure is totally different.

2. **S. falcatus,** *R. Br. Prod.* 332. Stems rarely above 2 or 3 in. high, rather stout, covered by the rigid loosely imbricate sheathing bases of the leaves. Leaves oblong, often falcate, 2 to 4 in. long and ¼ to ½ in. broad. Peduncles in the lower axils scarcely exceeding the leaves and sometimes shorter. Flowers usually 3 or 4, distant, white. Bracts ovate, about 2 lines long. Pedicels and ovary about ½ in. Sepals and petals nearly equal, oblong, obtuse, 6 to 7 lines long, the lateral sepals adnate to the base only of the basal projection of the column which forms a canaliculate claw to the labellum of about 1½ lines. Labellum ascending from the end of it, the lateral lobes large, ovate, the middle lobe very short broad and almost scale-like or scarcely prominent, with a thick fleshy dorsal protuberance or solid spur; the disk with a transverse 2-lobed scale or callus between the lateral lobes. Column short, with 2 very prominent acuminate angles. Capsules linear, sometimes 3 in. long.—Lindl. Gen. and Sp. Orch. 142; Bot. Reg. t. 1832; F. Muell. Fragm. vii. 97; *Thrixspermum falcatum*, Reichb. f. Beitr. 46.

N. S. Wales. Hunter's, Paterson's, and Williams' rivers, *R. Brown;* Macleay river, *Fitzgerald;* Hastings river, *C. Moore;* Woolongong, *Backhouse;* Illawarra, *A. Cunningham.*

3. **S. Fitzgeraldi,** *F. Muell. Fragm.* vii. 115. Stem foliage and general aspect of *S. falcatus*, the leaves from 3 to 6 in. long. Racemes with the peduncle 6 in. to 1 ft. long, the flowers of the size of those of *S. falcatus*, "snowy white spotted with rich lake or maroon." Bracts small, pedicels ½ in. long or rather more. Sepals and petals nearly equal, contracted at the base, 5 to 6 lines long, the lateral sepals adnate to the whole of the basal projection of the column as in *S. olivaceus*, but the projection shorter and broader than in that species. Labellum not half the length of the sepals, the lateral lobes ovate, falcate, scarcely 1½ lines long, the middle lobe scarcely prominent, the solid dorsal protuberance short and obtuse; disk with a large very prominent callus between the lateral lobes and a smaller one just within the small middle lobe.

N. S. Wales. Narvoo falls, Bellinger river, *Fitzgerald;* Mount Warning, *Guilfoyle.*

4. **S. olivaceus,** *Lindl. Bot. Reg.* 1839, *Misc.* 32. Stems covered with the prominent bases of the leaves as in *S. falcatus*, but generally shorter, under 1 in. long. Leaves oblong, often falcate, 2 to 3 in. long, apparently thinner than in *S. falcatus*. Racemes loose, of 2 or 3 flowers, the rhachis flexuose, not exceeding the leaves. Bracts very small. Sepals

and petals of a dull pale purple or yellowish brown, 5 to 6 lines long linear-oblong, much contracted below the middle, the lateral sepals dilated at the base and adnate to the whole of the basal projection of the column. Labellum white streaked with red, almost sessile, about half as long as the sepals, the lateral lobes oblong-falcate, the middle lobe very short and orbicular, the dorsal solid protuberance ovoid-conical, obtuse; the disk with several very prominent irregular calli between the lateral lobes. Column short, with a long basal projection. Capsule narrow.—F. Muell. Fragm. vii. 97; *S. dilatatus*, F. Muell. Fragm. i. 191; *Thrixspermum olivaceum* and *T. dilatatum*, Reichb. f. Xen. Orchid. ii. 122.

Queensland. Rockingham bay, *Dallachy;* Moreton bay, *W. Hill.*
N. S. Wales. Hastings and Clarence rivers, *Beckler;* Macleay river, *Fitzgerald;* Illawarra, *Shepherd.*

Gunnia picta, Lindl. Bot. Reg. 1838, Misc. 45 (*Sarcochilus pictus*, Reichb. f. in Walp. Ann. vi. 501; *Thrixspermum pictum*, Reichb. f. Xen. Orch. ii. 122), from Sydney, *Hort. Loddiges*, or from Brisbane (*Reichb. f.*), does not appear to me to differ from *S. olivaceus*. The calli of the labellum in this as in *S. parviflorus* vary from specimen to specimen.

5. **S. parviflorus,** *Lindl. Bot. Reg.* 1838, *Misc.* 34. Habit entirely that of the smaller specimens of *L. olivaceus*, the short stems covered with the prominent bases of the fallen leaves. Leaves rather thin, narrow-oblong or falcate, 2 to 3 or rarely 4 in. long. Scapes as long as or rather longer than the leaves, bearing 3 to 6 pale yellowish-green flowers, on pedicels of 2 to 3 lines. Sepals narrow-oblong, 4 to 5 lines long, besides the narrow base of the lateral ones adnate to the projection of the column. Petals rather shorter than the sepals. Labellum nearly sessile at the end of the basal projection of the column, white, more or less tinted with yellow, and spotted or streaked with red, the lateral lobes ovate-oblong often nearly as long as the sepals, the middle lobe very small, the dorsal protuberance or solid spur thickly conical or obovoid, at least half as long as the lateral lobes; the disk with several irregular very prominent calli between the lobes. Capsule linear.—*Gunnia australis*, Lindl. Bot. Reg. under n. 1699; Hook. f. Fl. Tasm. ii. 33, t. 128; *Sarcochilus Barklyanus*, F. Muell. Fragm. i. 89; *S. Gunnii*, F. Muell. l. c. 90; *S. australis*, Reichb. f. in Walp. Ann. vi. 501; *Thrixspermum parviflorum* and *T. australe*, Reichb. f. Xen. Orch. ii. 122.

N. S. Wales. Twofold bay, *F. Mueller* (no flowers seen but apparently this species).
Victoria. Apollo bay, *F. Mueller;* Dandenong range, *Taylor.*
Tasmania. On bushes and small trees in deep gullies and dense forests, Emu bay, Black river, Circular Head, Great Swan Port, &c., *Gunn, Milligan,* and others.

6. **S. Ceciliæ,** *F. Muell. Fragm.* v. 42, t. 42. Stems sometimes very short, sometimes elongated to 2 or 3 in. Leaves linear or narrowly linear-lanceolate, thick, 2 to 3 in. long. Racemes longer than the leaves and sometimes attaining 6 to 8 in., rather rigid, erect, bearing above the middle a number of small shortly pedicellate pink flowers. Lateral sepals almost ovate, nearly 3 lines long, adnate to the rather

F. Schonfeld lith.

F. Mueller direxit

Dr Grucby & Leich imp.

Sarcochilus Ceciliae. F. M

long basal projection of the column; dorsal sepal of the same length but narrower; petals still narrower. Labellum much shorter than the sepals, the lateral lobes oblong-falcate, the middle lobe very much shorter, thick and woolly-villous on the surface; the dorsal protuberance or solid spur broad, obtuse, half as long as the lateral lobes; the disk with several calli, more or less adnate to the lateral lobes.—*Thrixspermum Ceciliæ*, Reichb. f. Beitr. 71.

Queensland. Rockingham bay, *Dallachy* (with linear leaves); Cleveland bay, *Bowman* (with more lanceolate leaves).

7. **S. Hillii,** *F. Muell. Fragm.* ii. 94, vii. 98. Stems very short. Leaves few, narrow-linear, rather thick, 1 to 3 in. long. Racemes very slender, shorter or scarcely longer than the leaves, with a number of very small white flowers very shortly pedicellate. Sepals ovate-oblong, scarcely 1½ lines long; petals the same length, but narrower. Labellum about 1 line long, sessile on the very short basal projection of the column, the lateral lobes short, almost acute, the middle lobe rather longer, broader than long, retuse, thickly covered on the surface with white wool; the dorsal protuberance or solid spur narrow-conical, longer than the lateral lobes; the disk with several prominent calli.—*Dendrobium Hillii*, F. Muell. Fragm. i. 88, ii. 94; *Thrixspermum Hillii*, Reichb. f. Beitr. 71.

Queensland. Brisbane river, Moreton bay, *W. Hill;* Rockhampton, *Thozet, O'Shanesy.*

N. S. Wales. Paramatta, Camden and Nepean rivers, *Woolls;* Hastings and Clarence rivers, *Beckler.*

8. **S. phyllorhizus,** *F. Muell. Fragm.* v. 201. Apparently stemless and leafless, the irregularly flattened creeping roots spreading from the very short stock and sometimes assuming almost the aspect of leaves. Scapes slender, erect, almost filiform, 3 to 6 in. high, bearing several small flowers on very short filiform pedicels. Sepals and petals obovate or obovate-oblong, about 2 lines long, the lateral sepals as in *S. falcatus* adnate to the base only of the columnar projection, which forms a linear claw to the labellum almost half as long as the sepals. Labellum sessile at the end of this projection or claw, the lateral lobes small, narrow-oblong, clavate, purple; the middle lobe very short and obtuse, almost globular and densely white-woolly on the inner surface as in *S. Ceciliæ* and *S. Hillii;* the dorsal protuberance very short.—*Thrixspermum phyllorhizum*, Reichb. f. Beitr. 71.

Queensland. Cape York, *M'Gillivray, Daemel;* Fitzroy island, *Herb. F. Mueller* (collector not named).

9. CLEISOSTOMA, Blume.

Sepals and petals nearly equal, free, spreading, the lateral sepals sometimes adnate to a basal projection of the column. Labellum inserted at the base of the column or of its basal projection but free from it, with a pouch or spur at its base, undivided inside but with a reflexed or horizontal scale or appendage inside at the orifice, the lamina 3-lobed,

the middle lobe usually short and broad, the lateral ones falcate or narrow. Column short, with 2 teeth or lobes at the apex in front. Anther lid-like; pollen-masses 4 in pairs, attached to a somewhat flattened caudicle.—Herbs with the habit of *Sarcochilus* or of *Saccolabium*, the stems short or elongated. Leaves more or less distichous, leaving short sheathing persistent bases. Flowers small, in axillary racemes, the spur of the labellum rather long in the Australian species.

The genus extends over East India and the Archipelago; the Australian species, as far as known, are all endemic.

Column very shortly produced at the base. Spur of the labellum with the inner appendage deflexed and ciliate on the upper or lamina side of the cavity . . . . . 1. *C. tridentatum.*

Column with a rather long basal projection. Spur with the inner appendage horizontal and glabrous on the lower or column side of the orifice . . . . . 2. *C. Beckleri.*

Column not produced at the base. Spur of the labellum with the inner appendage horizontal and glabrous on the lower or column side of the orifice . . . . . 3. *C. Macphersoni.*

1. **C. tridentatum,** *Lindl. Bot. Reg.* 1838, *Misc.* 33. Stems often elongated, rather slender, the persistent bases of the leaves much less prominent than in the *Sarcochili*. Leaves mostly 2 to 3 in. long, linear-oblong or falcate. Racemes slender, flexuose, shorter than the leaves. Bracts very small. Flowers very small, shortly pedicellate. Sepals and petals oblong-lanceolate, about 2 lines long, the dorsal sepal rather broader, the lateral ones and the petals slightly falcate, the lateral sepals adnate to the very short basal projection of the column. Labellum nearly as long as the sepals; spur rather long, deflexed, with a deflexed ciliate membrane inside, on the side next the lamina of the labellum; lateral lobes spreading, falcate and acute; middle lobe very short, obtuse, fleshy, concave. Column exceedingly short, the margin deeply membranous, with 2 anterior narrow teeth. Capsule narrow, 1 to 1½ in. long.—*Saccolabium calcaratum*, F. Muell. Fragm. i. 192; *Sarcochilus calcaratus*, F. Muell. Fragm. ii. 181, vii. 98; *Sarcochilus tridentatus*, Reichb. f. in Walp. Ann. vi. 500.

Queensland. Brisbane river, Moreton bay, *W. Hill, Bailey;* Wide bay, *Leichhardt.*

N. S. Wales. Camden, Bent's Basin, Nepean river, *Woolls;* Hastings and Clarence rivers, *Beckler;* New England, *C. Stuart;* southward to Illawarra, *Ralston.*

2. **C. Beckleri,** *F. Muell. Herb.* Stem and leaves not seen, but said to be an epiphyte with a short rigid stem hanging from trees. Racemes 2 or 3 in. long. Sepals and petals scarcely 1½ lines long, the lateral sepals adnate to a basal projection of the column of about 1½ lines. Labellum at the end of the basal projection; spur narrow-conical, above 1 line long, the orifice half closed by a transverse plate on the basal side; the lamina short and broad, the lateral lobes erect and narrow, almost linear, shorter than the spur, the middle lobe shortly and broadly semiorbicular.

N. S. Wales. Clarence river, *Beckler.*

3. **C. Macphersoni,** *F. Muell. Herb.* Stems short, covered with the very prominent bases of the leaves. Leaves 4 to 6 in. long and at least 1 in. broad, the veins not prominent except the midrib, which forms an acute keel underneath. Spikes rigid, not longer than the leaves, the flowers rather numerous, sessile, "red." Sepals and petals rather thick, about 2½ lines long, all nearly equal. Column not produced at the base. Labellum sessile, the spur oblong, obtuse, rather dilated beyond the middle, 1½ lines long, closed at the orifice by a large ovate plate close under the column; lamina short and broad, the middle lobe orbicular, about 1¼ lines diameter, the lateral lobes shorter, falcate and narrow. Capsule oblong, strongly ribbed.—*Saccolabium Macphersonii*, F. Muell. Fragm. vii. 96.

Queensland. Rockingham bay, *Dallachy*.—This has much the aspect of a small-flowered *Sarcanthus*, but the spur is not divided inside.

10. VANDA, R. Br.

Sepals and petals nearly equal, free, spreading, contracted at the base. Labellum inserted at the base of the column, produced at the base into a pouch or conical spur, the lamina spreading, 3-lobed, the disk smooth or in species not Australian with callosities above the pouch. Column short, thick, erect, with an obtuse or retuse rostellum. Anther terminal, lid-like, 2-celled. Pollen-masses waxy, 4 in pairs or 2 deeply 2-lobed, attached to a linear or cuneate caudicle on a large gland.—Epiphytical herbs, with distichous often thick and coriaceous or fleshy leaves. Racemes lateral. Flowers usually large and showy.

The genus extends over E. India and the Archipelago as far as S. China; the only Australian species is apparently the same as an Archipelago one.

1. **V. Hindsii,** *Lindl. in Hook. Lond. Journ.* ii. 237, *and in Paxt. Mag.* ii. 21. Stems of moderate length, with linear canaliculate leaves of 1 ft. or more. Racemes 6 in. to above 1 ft. in length, with 3 to 10 large flowers, the spreading pedicels often 2 to 3 in. long including the ovary. Sepals and petals nearly 1 in. long, broadly obovate with sinuate margins, contracted into a broad claw, of a pale yellowish-white outside, white inside with purple spots, slightly shaded with yellow at the base and with pink towards the margins. Labellum at least as long as the sepals, convex, rather thick and fleshy, generally purple but with more or less of white towards the base and darker streaks on the disk, the lateral lobes short and broad, the middle lobe much longer, obovate-oblong, emarginate or shortly 2-lobed, without callosities on the disk. Column white.—*V. tricolor*, Lindl. in Bot. Reg. 1847, under t. 59, and in Paxt. Fl. Gard. ii. 20, t. 42; Bot. Mag. t. 4432; *V. suavis*, F. Muell. Fragm. vii. 135, but scarcely of Lindl.

N. Australia. Arnhem's Land, *F. Mueller;* and also in New Guinea and Java, if the determination and synonymy are correct.—Of the Australian plant I have only seen a single flower and leaf in Herb. F. Muell., in which the size and shape of the sepals, petals, and labellum agree precisely with those of *V. Hindsii* and *V. tricolor* in Herb. Lindl. as far as can be judged from dried specimens. Lindley distinguishes

V. Hindsii from *V. tricolor* chiefly by the long raceme with 10 instead of 3 or 4 flowers. In Herb. Hook. the specimen of *V. tricolor* figured in the Magazine has had at least 10 flowers. It is true that Lindley, in Folia Orchidacea, refers this to *V. suavis*, but Reichenbach thinks it more correctly placed under *V. tricolor*. F. Mueller had at first referred his Australian plant to *V. tricolor*, but afterwards determined it as *V. suavis*, on account of the colour of the flowers. His description, however, agrees well with the colours of *V. tricolor* as depicted in a sketch in Herb. Lindl., whilst the true *V. suavis* has not only the petals and sepals with a pure white ground, but their shape as well as that of the labellum is somewhat different. Possibly, however, *V. Hindsii*, *V. tricolor*, and *V. suavis* may all be forms of one species, now frequent in our collections of living Orchideæ under the names of *V. tricolor* or *V. suavis*, and evidently very variable both in the colour and the shape of the perianth.

11. SACCOLABIUM, Lindl.

Sepals and petals nearly equal, free, spreading, the lateral sepals often more or less dilated at the base and adnate to a basal projection of the column. Labellum articulate at the base of the column or at the end of its basal projection, with a hollow spur or pouch at the base, neither internally divided nor with any internal appendage, the lamina usually undivided or without any prominent middle lobe. Column short, erect, often produced at the base. Anther lid-like. Pollen-masses 4 in pairs (or 2 deeply 2-lobed), attached to a caudicle.—Epiphytical herbs. Stems marked with or covered by the truncate persistent bases of the leaves. Leaves flat. Racemes axillary, simple or in species not Australian branched. Bracts small.

The genus is generally distributed over East India and the Archipelago. The only Australian species appears to be endemic.

1. **S. Hillii,** *F. Muell. Fragm.* i. 192. Stems rigid, flexuose, several inches long, covered with the prominent deeply striate bases of the leaves. Leaves distichous, rigid, with prominent nerves, mostly 3 to 5 in. long and ¾ to 1 in. broad. Racemes usually about the length of the leaf, the flowers numerous and small on very short pedicels. Sepals and petals, oblong-linear, not quite 2 lines long, the lateral ones adnate to the short basal projection of the column, falcate as well as the petals, the dorsal one rather longer and incurved. Labellum nearly as long as the sepals, the basal pouch short and broad without any internal appendage, the lamina concave or embracing the column, much broader than long, truncate without any middle lobe, the angles (or lateral lobes) shortly acuminate and somewhat incurved, the disk with an erect conical tooth or callosity immediately above the pouch but not reflexed into it.

Queensland. Brisbane river, Moreton bay, *F. Mueller, W. Hill, Bailey.*
N. S. Wales. Clarence river, *Beckler;* Tweed river, *Guilfoyle.*

12. GEODORUM, Jacks.

Sepals and petals nearly equal, free, erect. Labellum erect, sessile at the base of the column but free from it, broad, concave and slightly saccate at the base, entire or scarcely lobed. Column short, erect,

semiterete. Anther terminal, lid-like, very concave. Pollen masses 2, 2-lobed, waxy, attached to a very short caudicle on a transverse gland. —Terrestrial herbs with a short creeping rhizome. Leafy stems short, sometimes pseudo-bulbous at the base. Leaves rather large, plicate and strongly ribbed, the lower ones reduced to membranous sheathing scales. Scapes from the base of the leafy stem, leafless except the sheathing scales, terminating in a rather dense usually recurved raceme.

The genus extends over East India and the Archipelago. The Australian species is generally supposed to be endemic, but the differences between some of the species are very slight, and require further investigation.

1. **G. pictum,** *Lindl. Gen. and Sp. Orch.* 175. Leafy stems a few inches high, terminating in 2 or 3 ovate-lanceolate leaves of 4 to 8 in., tapering at both ends. Scapes from the axil of a membranous scale close to the base of the leafy stem, shorter or perhaps sometimes longer than the leaves, bearing membranous sheathing scales, several rather large at the base of the scape, distant higher up. Flowers pink, rather numerous in a terminal raceme, reflexed only after the flowers have begun to expand (from F. Mueller's notes). Pedicels short. Bracts linear, white. Sepals and petals oblong, 4 to 5 lines long. Labellum broadly ovate, darkly veined, obtuse and emarginate or very shortly 2-lobed at the end, the margin somewhat undulate, the disk saccate at the base with 2 double raised lines or plates more or less marked at the base often evanescent upwards or confluent into 2 single ones and terminating in a toothed or entire transverse callus below the end of the labellum. Column short, the margin winged. Pollen-masses ovoid-globular, waxy, 2-lobed.—F. Muell. Fragm. iii. 24; Reichb. Beitr. 46; *Cymbidium pictum,* R. Br. Prod. 331.

N. Australia. North coast, *R. Brown;* Port Darwin, *Schultz, n.* 728; Escape Cliffs, *Hulse.*

Queensland. Moreton bay, *Bernays;* Rockhampton, *O'Shanesy, Thozet;* Cleveland bay, *Bowman;* Wide bay, *Bidwill;* Rockingham bay, *Dallachy,* Port Denison, *Fitzalan.*

F. Mueller, Fragm. viii. 31, refers Hulse's specimens to the East Indian *G. dilatatum,* Br., founded on Roxburgh's *Limodorum recurvum,* and in both Hulse's and Schultz's specimens I find the callus near the end of the labellum entire, not toothed or divided as in the majority of the Queensland specimens. I have been unable, however, to find two specimens with their calli and markings the same, and it appears to me most probable that there is but one species in Australia, and that perhaps not really distinct from the Indian *G. dilatatum.*

13. EULOPHIA, R. Br.

Sepals and petals nearly equal, spreading, free or the lateral sepals adnate to the short basal projection of the column. Labellum inserted at the base of the column or its projection but free from it, produced at the base into a short pouch or spur, the lamina 3-lobed or rarely undivided, the disk usually marked with cristate or bearded veins. Column semiterete, with the front angles acute or winged. Pollen-masses 4 in pairs,

or 2 and bifid, waxy, attached to a short linear caudicle on a transverse gland.—Terrestrial herbs, with short stems. Leaves distichous, plicate, or sometimes those of the flowering stems reduced to sheathing scales. Racemes terminal or on radical scapes.

The genus is spread over tropical and subtropical Asia and Africa. The Australian species are both endemic.

Labellum strongly and darkly veined, the middle lobe much broader than long . . . . . 1. *E. venosa.*
Labellum finely veined, the middle lobe as long as broad . . . . 2. *E. Fitzalani.*

1. **E. venosa,** *Reichb. f. in Herb. Lindl.* An erect leafless herb, with the habit of *Dipodium punctatum*, the sheathing scales imbricate at the base of the stem, the upper ones distant, passing into narrow bracts, often as long as the pedicel and ovary. Flowers several in a terminal raceme, whitish with deep red veins. Sepals broadly lanceolate, 6 to 8 lines long, marked with longitudinal somewhat anastomosing veins, the lateral ones attached to the short basal projection of the column. Petals rather shorter and broader, almost obovate-oblong. Labellum rather longer than the sepals, the spur short, the lateral lobes ovate, strongly veined, the middle lobe twice as long and very much broader than long, almost reniform, elegantly veined, the disk with two longitudinal glabrous raised lines or plates between the lobes, shortly prolonged on the middle lobe which has besides 3 or more short undulate raised lines or plates. Column half as long as the sepals, the dorsal lobe bearing the anther rather long and ovate.—*Dipodium venosum*, F. Muell. Fragm. i. 61.

N. Australia. Providence Hill and Macadam Range, *F. Mueller.*
Queensland. Rockingham bay, *Dallachy;* Port Mackay, *Nernst.*

2. **E. Fitzalani,** *F. Muell. Fragm.* viii. 30. Habit apparently that of *E. venosa*, the single specimen leafless, nearly 1 ft. high, with a sheathing bract near the base about 1½ in. long, the bracts subtending the pedicels reaching to the top of the ovary. The sepals narrow-lanceolate, striate, acuminate-acute, about 7 lines long, the lateral ones attached at the base to the projection of the column. Petals scarcely broader but rather shorter and more obtuse, the veins slightly anastomosing. Labellum as long as the petals, the basal spur short but longer than in *E. venosa*, the veins branching but not so dark and strong as in *E. venosa*, lateral lobes not halfway up and not very prominent; middle lobe large but scarcely broader than long, the margins much undulate and very obtuse; the disk with 4 slightly raised lines quite entire between the lateral lobes, crisped or fringed and extending to about half the length of the middle lobe. Column not half so long as the sepals. Pollen-masses 2, depressed globular.

Queensland. Mount Dryander, *Fitzalan.*

14. DIPODIUM, R. Br.

(Leopardanthus, *Blume;* Wailesia, *Lindl.*)

Sepals and petals nearly equal, free, spreading. Labellum sessile, erect, adnate to the column at its base and then gibbous or produced

into a very short pouch, the lamina 3-lobed, the lateral lobes narrow, the middle lobe longer, oblong-ovate or rhomboidal, with a hairy or pubescent patch near the end. Column erect, semicylindrical, the membranous margin variously sinuate or toothed. Anther lid-like. Pollen-masses 2, deeply 2-lobed (or 4 in pairs), lateral, attached to separate caudicles proceeding from a rather large gland.—Terrestrial herbs, the leafy stems when present simple with distichous leaves. Racemes on long leafless scapes or long erect axillary peduncles, with sheathing scales imbricate at the base of the scape or peduncle, the upper distant ones passing into small bracts. Flowers rather large, often spotted.

Besides the two Australian species which appear to be endemic, there are a few from New Caledonia, the Eastern Archipelago, and East India.

No leaves. Scales not numerous, loosely imbricate at the base of the scapes . . . . . 1. *D. punctatum.*
Stems with linear-lanceolate leaves. Peduncles axillary . . . 2. *D. ensifolium.*

1. **D. punctatum,** *R. Br. Prod.* 331. A leafless plant with thick fibrous roots and erect stem attaining with the racemes 1 to 2 ft., the sheathing scales few and loosely imbricate and obtuse at the base, distant higher up. Flowers rather large, more or less red and usually but not always spotted with purple, in a terminal raceme sometimes very short sometimes occupying a third of the stem. Sepals and petals oblong-lanceolate, 6 to 8 lines long. Labellum as long or rather longer, the basal pouch or gibbosity very short; lateral lobes below the middle narrow and erect; middle lobe twice as long, obovate-oblong; disk with 2 raised lines very prominent and glabrous at the base, pubescent upwards and ending sometimes in tufts or pubescent scales, the middle lobe with one broad pubescent line or patch. Column half as long as the sepals, the inner face pubescent. Pollen-masses 2, deeply 2-lobed, laterally attached below the subulate ends of the caudicles.—Hook. f. Fl. Tasm. ii. 32, t. 127; Bot. Reg. t. 1980; Reichb. f. Beitr. 45; *Dendrobium punctatum,* Sm. Exot. Bot. i. 21, t. 12.

N. Australia. Port Darwin, *Schultz, n.* 623 (with narrow pale coloured sepals and petals, perhaps not spotted).

Queensland. Brisbane river, Moreton bay, *F. Mueller;* Condamine river, *Leichhardt;* Rockhampton, *O'Shanesy;* Armidale, *Perrott;* Burdekin river and Mount Elliott, *Fitzalan.*

N. S. Wales. Hastings and Clarence rivers, *Beckler;* Macleay river, *Fitzgerald;* New England, *C. Stuart.*

Victoria. Upper Yarra and Dandenong Range, *F. Mueller;* Glenelg river, *Robertson.*

Tasmania. Circular Head, *Gunn;* Port Sorell and Cheshunt, in stony and moist places, generally growing near Eucalypti, *Archer.*

S. Australia. Ranges near Mount Lofty, *F. Mueller.*

The pubescence of the labellum appears to be very variable in shape and extent. The closely allied New Caledonian *D. squamatum* differs chiefly in the more closely imbricate appressed and acute scales at the base of the stem.

2. **D. ensifolium,** *F. Muell. Fragm.* v. 42. Stems leafy, from a few inches to above 1 ft. high without the racemes. Leaves distichous, complicate or canaliculate, linear-lanceolate, acute, strongly keeled and

usually prominently ribbed on each side, 3 to 6 in. long, the persistent truncate base usually rather long. Racemes with the peduncle often above 1 ft. long, sometimes appearing at first terminal, and usually only 1 or 2 on the same stem, but really always axillary. Sheathing scales small, distant, with a few imbricate ones at the base of the peduncle. Pedicels with the ovary about ½ in. long. Sepals and petals "pink and spotted," 6 to 8 lines long, the sepals oblong-lanceolate, the petals rather broader and more contracted at the base. Labellum about the length of the sepals, scarcely gibbous at the base but shortly connate with the column as in other species, the lateral lobes placed much below the middle, linear or linear-spathulate, incurved, the middle lobe about twice as long, broadly rhomboidal; the disk with 2 pubescent lines between the lateral lobes confluent into 1 at the base of the middle lobe, and a dense patch of scaly hairs at the end of it. Column not half the length of the sepals, pubescent in front. Pollen-masses 2-lobed, the 2 caudicles long and slender.

Queensland. Rockingham bay, *Dallachy.*

Tribe 3. Bletideæ.—Anther lid-like, incumbent, usually deciduous. Pollen-masses waxy, 4 or 8, tapering at the base, separately attached and sessile or on short caudicles, or on a short dichotomous caudicle. Terrestrial herbs, with creeping or rarely tuberose rhizomes or rarely epiphytes. Sepals and petals nearly equal, free and spreading. Flowers often large.

15. CYMBIDIUM, Swartz.

Sepals and petals nearly equal, free, spreading. Labellum sessile, free, articulate on the base of the column, or very shortly adnate to it, concave, entire or 3-lobed. Column erect or slightly incurved, semiterete, sometimes narrowly winged. Anther lid-like, very concave, more or less 2-celled. Pollen-masses 2, usually 2-lobed (4 united in pairs), sessile on a somewhat triangular gland.—Plants usually epiphytical. Stems often short and slightly swollen into pseudobulbs. Leaves elongated, keeled, striate. Flowers not small, in loose racemes pedunculate in the lower axils, the peduncle often long with sheathing rigid scales at the base. Bracts usually small.

The genus, as at present understood, comprises tropical and subtropical species, both of the New and of the Old World, but chiefly from the latter. It has not, however, been subject to any recent revision. The Australian species appear to be all endemic.

Labellum 3-lobed with 2 longitudinal raised pubescent or fringed plates on the disk . . . . . 1. *C. canaliculatum.*
Labellum 3-lobed without longitudinal plates. Leaves very long and mostly 1 in. broad . . . . . 2. *C. albuciflorum.*
Labellum undivided without longitudinal plates . . . . . 3. *C. suave.*

1. **C. canaliculatum,** *R. Br. Prod.* 331. Leaf-stems or pseudobulbs usually 2 to 4 in. long. Leaves elongated, narrow, keeled, channelled above, striate, the upper ones often 6 in. to 1 ft. long or even more, the lower ones short. Racemes from the lower axils often 1 ft.

long including the peduncle, the sheathing scales at the base rather rigid, the bracts small and spreading. Pedicels ½ to 1 in. long. Sepals and petals oblong or lanceolate, 5 to 7 lines long. Labellum rather shorter than the sepals, distinctly 3-lobed, the lateral lobes decurrent along the claw, the middle lobe broadly ovate or almost rhomboidal, as long as the lower part, papillose on the upper surface; the disk between the lateral lobes with 2 longitudinal raised lines or plates slightly pubescent or shortly fringed. Column about as long as the lateral lobes, slightly incurved, with 2 narrow longitudinal wings.—Lindl. Gen. and Sp. Orch. 164; Bot. Mag. t. 5851; Reichb. f. Beitr. 45.

N. Australia. Fitzmaurice river, *F. Mueller.*

Queensland. Broad Sound, *R. Brown;* Cape York (*Botanical Magazine*); Herbert's Creek, *Bowman;* Cape river, *Fitzalan;* Burnett, *Haly.*

N. S. Wales. Hunter's river, *A. Cunningham;* Richmond river, *Fawcett;* also in *Mitchell's* and *Leichhardt's* collections.

S. Australia. Cooper's Creek (*F. Mueller*), the specimen not seen.

The flowers are brown with green margins according to the Bot. Mag.; yellow, blotched with red according to others; the labellum dull white spotted with red.

2. **C. albuciflorum,** *F. Muell. Fragm.* i. 188. Stems or pseudobulbs often 1 ft. long. Leaves attaining 2 ft. or more and often 1 in. broad, keeled underneath, channelled above, and striate. Racemes including the peduncle 1 to 2 ft. long, axillary, with sheathing scales at their base. Bracts small, at length spreading or reflexed. Pedicels rather rigid, ½ to ¾ in. long. Sepals and petals greenish yellow, about 5 lines long, rather brown outside, more obtuse than in *C. canaliculatum*, the sepals broadly oblong, the petals rather narrower. Labellum nearly as long as the sepals, red at the base, yellowish above, 3-lobed as in *C. canaliculatum* but without the longitudinal plates of that species, of a rather thicker consistence and not quite so broad. Column with a prominent angle in front, the apex truncate.

Queensland. Moreton bay, *W. Hill;* Rockingham bay, *Dallachy;* Mount Dryander, *Fitzalan.*

3. **C. suave,** *R. Br. Prod.* 331. Stems usually short, more densely covered with the imbricate strongly striate bases of the leaves than the two preceding species, and these bases often split up into fibres. Leaves narrow, often above 1 ft. long, keeled and strongly striate. Racemes rather more dense than in *C. canaliculatum*, the sheathing scales at the base of the peduncle more rigid and leaf-like, the flowers rather smaller, green blotched with red. Sepals and petals scarcely 5 lines long, rather acute. Labellum narrower than in *C. canaliculatum*, especially towards the base, undivided or obscurely sinuate 3-lobed, the disk without longitudinal plates but thickened along the centre. Column with 2 narrow wings. Capsule ovoid-globular, scarcely 1 in. long.—Lindl. Gen. and Sp. Orch. 164; F. Muell. Fragm. i. 187; Reichb. f. Beitr. 46.

Queensland. Moreton bay, *C. Stuart.*—Some far advanced specimens from Rockhampton, *O'Shanesy, Dallachy*, with smaller flowers may belong to the same species.

N. S. Wales. Hunter's river, *R. Brown;* Paramatta, *Woolls;* northward to Hastings river, *Beckler;* southward to Illawarra, *Shepherd.*

16. SPATHOGLOTTIS, Blume.

Sepals and petals nearly equal, free, spreading. Labellum articulate at the base of the column, concave or saccate at the base, deeply 3-lobed, the middle lobe contracted at the base and bearing prominent tubercles or calli. Column erect, free, more or less dilated or 2-winged upwards. Anthers terminal, lid-like, 2-celled. Pollen-masses 8, of which 4 usually smaller, waxy, with very short separate caudicles without any common gland.—Terrestrial herbs with subterranean tuberous rhizomes. Leaves usually long, plicate and strongly ribbed. Racemes on erect scapes, leafless except sheathing scales. Bracts usually rather large.

The genus is dispersed over tropical Asia; the only Australian species perhaps endemic, but closely allied to one ranging over the Archipelago.

1. **S. Paulinæ,** *F. Muell. Fragm.* vi. 95. Tubers small. Leaves lanceolate, acuminate, 2 to 3 ft. long, tapering into a long petiole, plicate and strongly ribbed. Scapes attaining 3 or 4 ft. bearing a short raceme of "purple" flowers. Bracts lanceolate, about ½ in. long; pedicels about 1 in. Sepals and petals about 5 lines long. Labellum about as long, very short and concave below the lobes, the lateral lobes linear-oblong, slightly spathulate and incurved, the middle lobe scarcely longer, obovate, obtuse or emarginate, contracted much below the middle, with 3 large prominent calli immediately above the lateral lobes, hairy around and immediately above the calli. Column incurved, not much shorter than the sepals, slightly dilated upwards.—*Bletia Paulinæ*, F. Muell. l.c.

Queensland. Rockingham bay, *Dallachy.*—Very near the *S. plicata*, Blume (*S. lilacina*, Griff.), but the flowers are rather smaller, and the shape of the middle lobe of the labellum different. The few flowers seen were, however, not in a good state.

17. PHAIUS. Lour.

Sepals and petals nearly equal, free, spreading. Labellum broad, produced into a spur at the base, erect and convolute round the column, entire or 3-lobed and more or less spreading at the top. Column semicylindrical, elongated. Anther lid-like. Pollen-masses 8, nearly equal or 4 shorter, waxy, attached to the branches of a dichotomous caudicle, but no gland.—Terrestrial herbs, the leafy stems short and thickened into pseudobulbs or almost stemless. Leaves large. Scapes radical, tall, erect, leafless except sheathing scales imbricate at the base, distant on the stem and passing into the bracts. Flowers large and showy.

The genus is spread over tropical and subtropical Asia. Of the two Australian species or varieties, one is the same as an Archipelago one, the other may be endemic, but is not sufficiently known.

Sepals and petals brown inside . . . . . 1. *P. grandifolius.*
Sepals and petals yellow inside . . . . . 2. *P. Bernaysii.*

1. **P. grandifolius,** *Lour.*; *Lindl. Gen. and Sp. Orch.* 126. Stems tufted, usually thickened into short pseudobulbs at the base, bearing 2

or 3 oblong or ovate-lanceolate leaves often above 1 ft. long, narrowed into a long petiole. Scapes radical, 2 to 4 ft. high, bearing a loose raceme of large showy flowers. Sepals and petals broadly lanceolate, 1¾ to near 2 in. long, white outside, cinnamon-brown inside. Labellum nearly as long as the sepals, very broadly obovate, broadly and very obtusely 3-lobed, or notched or shortly acute in the centre, the margins undulate-crisped, white and shaded or streaked with crimson, loosely encircling the column at its base, the spur short narrow and usually curved. Column nearly ¾ in. long.—*Bletia Tankervilliæ*, R. Br. in Bot. Mag. t. 1924; *Phaius australis*, F. Muell. Fragm. i. 42; *P. leucopheæus*, F. Muell. Fragm. iv. 163; *P. Carroni*, F. Muell. Pl. Burdek. Exped. 19.

Queensland. Moreton bay and island, *A. Cunningham, M'Gillivray;* Rockingham bay, *A. Cunningham, Dallachy;* Lady Elliott's island, *Burdekin Expedition.*
N. S. Wales. Macleay river, *Fitzgerald;* Tweed river, *Herb. F. Mueller.*

2. **P. Bernaysii,** *Rowl.; Reichb. f. in Gard. Chron.* 1873, 361. Habit stature foliage and inflorescence of *P. grandifolius*, from which it is only to be distinguished by the colour of the flower of a pale yellow inside, the labellum also yellow edged with white. The spur of the labellum appears in the two flowers accompanying the wild specimen to be rather straighter than in the common species, but curved in the cultivated plant. Reichenbach refers it to *P. Blumei*, distinguished by the labellum acute not notched in the centre, but this appears to vary much from specimen to specimen.—*P. Blumei* var. *Bernaysii*, Reichb. f. in Bot. Mag. t. 6032.

Queensland. Moreton bay, *Bernays.*

18. CALANTHE, R. Br.

Sepals and petals nearly equal, free, spreading, the lateral sepals sometimes shortly adnate to the labellum at the base. Labellum connate at the base with the column in a sort of cup, usually produced into a spur at the base, the lamina spreading, lobed or undivided, the disk with several tubercles or callosities opposite the anther. Column erect, the margins connate with the labellum, the rostellum usually rostrate. Anther lid-like. Pollen-masses 8, tapering to the base and there affixed to a divisible gland.—Terrestrial herbs, stemless or nearly so. Leaves large, plicate, usually in tufts of 2 or 3. Scapes in the axils of the outer leaves tall, erect, and many-flowered. Flowers often showy, white or lilac.

The genus is dispersed over tropical Asia and the islands of the Pacific, with one Mexican species; the only Australian species extends over the Archipelago and the East Indian Peninsula.

1. **C. veratrifolia,** *R. Br. in Bot. Reg. under n.* 573. Rhizome shortly creeping, with tufts of 2 or 3 leaves, sometimes forming a very short stem or pseudobulb at the base. Leaves 1 to 2 ft. long, ovate-lanceolate, plicate undulate and strongly ribbed, tapering into a petiole which is again dilated at the base. Scapes usually in the axil of the

outer leaf, 2 to 4 ft. high, the flowers rather crowded near the summit. Pedicels spreading, ½ to 1 in. long, recurved after flowering. Sepals and petals white, obovate-oblong, nearly 5 lines long, the petals usually broader and more contracted at the base than the sepals. Labellum much longer, the spur slender, ¾ in. long and usually pubescent, the lamina 3-lobed with the middle lobe deeply bifid, the 4 lobes oblong and sometimes nearly equal, but variable in breadth as well as in the relative depth to which they are divided, the callosities of the disk yellow. Capsule obovoid-oblong, about 1½ in. long.—Bot. Reg. t. 720; Bot. Mag. t. 2615.

Queensland. Rockingham bay, *Dallachy;* Brisbane river, Moreton bay, *F. Mueller.*

N. S. Wales. Hastings river, *Beckler;* Richmond river, *Henderson;* Tweed river, *Guilfoyle;* Illawarra, *A. Cunningham.*

The Australian specimens, constituting the var. *australis*, Lindl. Fol. Orchid. Calanthe, 8, appear generally to have the lobes of the labellum rather broader than the Indian ones.

Tribe 4. Arethuseæ.—Anther lid-like, incumbent, usually deciduous. Pollen granular or mealy. Terrestrial or rarely epiphytes. Stems in the Australian genera or sections leafless at the time of flowering.

19. GALEOLA, Lour.

(Erythrorchis, *Blume;* Ledgeria, *F. Muell.*)

Sepals and petals nearly equal in length, connivent or open, the dorsal sepal incurved, the petals narrower. Labellum sessile, broad, incurved round the column, the lateral lobes very short and erect or obsolete, the middle lobe short and broad, undulate-crisped, the disk with 2 raised longitudinal lines, the intervening space pubescent or glabrous. Column elongated, erect, not at all or scarcely winged. Anther lid-like, incumbent, with a broad flat or convex dorsal appendage, 2-celled. Pollen granular-farinaceous or almost waxy, in 2 deeply 2-lobed distinct masses, without any caudicle or gland.—Leafless epiphytes, sometimes climbing to a great extent, the branches flexuose. Flowers in terminal usually pendulous panicles. Bracts at the base of the branches and panicles small or large, but always concave and half-stem-clasping.

Besides the Australian species, one of which is closely allied to a Javanese one, there are two or three others from East India, the Archipelago, and perhaps from New Caledonia. The genus appears to have been quite correctly referred by Reichenbach f. to the *Galeola* of Loureiro, and I should also concur in the retention of *Cyrtosia*, Bl., as distinct.

Bracts scarcely ¼ in. long. Labellum pubescent inside between the raised lines which end in a transverse callus. Pollen almost waxy . . . . . 1. *G. cassythoides.*

Bracts 1 to 2 in. long. Labellum glabrous between the raised lines which converge into one, the lamina on each side marked with diverging lines fringed with small linear hairs . . . . 2. *G. foliata.*

1. **G. cassythoides,** *Reichb. f. Xen. Orchid.* ii. 77. Stems leafless, of a chocolate-brown colour, climbing to a great length and closely adhering to the stems of trees, throwing out adventitious rootlets at the nodes opposite the bracts, terminating in long pendulous panicles. Flowers of a brownish or golden yellow, in short racemes or branches of the panicle, quite glabrous and smooth. Bracts at the base of the pedicels and branches ovate-lanceolate, acute, 1 to 2 lines long and those of the flowerless stems scarcely 3 lines. Pedicels and ovary 3 to 4 lines. Sepals 5 to 6 lines long, oblong-lanceolate, the dorsal one incurved, the lateral ones slightly falcate; petals as long as the sepals but linear. Labellum white with transverse coloured bands, scarcely so long as the sepals, sessile, very broad, erect, concave, almost convolute, obscurely 3-lobed, the lateral lobes or obtuse angles short, erect and entire, the middle lobe very short and broad, spreading, undulate-crenate; disk of the erect part with 2 raised longitudinal lines separated by a broad pubescent centre and ending in a transverse callus, the lamina or middle lobe pubescent on the surface at the base and bearing sometimes irregular undulate calli. Anther with a large broad convex or almost hood-like dorsal appendage, 2-celled in front; pollen-masses 2, without caudicles, deeply 2-lobed, but the lobes closely approximate and the consistence almost as waxy as in *Dendrobium.*— *Dendrobium cassythoides*, A. Cunn. in Lindl. Bot. Reg. under n. 1828; *Ledgeria aphylla*, F. Muell. Fragm. i. 239, ii. 167; *Erythrorchis aphylla*, F. Muell. Fragm. ii. 167.

Queensland. Moreton island, *F. Mueller.*
N. S. Wales. Hastings river, *C. Moore, Beckler;* New England, *C. Stuart.*

The species is very closely allied to the Javanese *G. altissima*, which, judging from Blume's figure and description (under *Erythrorchis*), has the same pollen; but there appear on a comparison of specimens, to be sufficient differences in the flowers to keep the two distinct as well-marked varieties, if not as species. I have only seen the pollen-masses in one flower, where they were certainly very much like those of a *Dendrobium.* They are distinctly described as waxy by F. Mueller, and by Blume in his *E. altissima* as "solidiuscula."

2. **G. foliata,** *F. Muell. Fragm.* viii. 31. Climbing habit apparently the same as that of *G. cassythoides*, but not specially described by the collectors, the panicle larger broader and more branched, and the bracts subtending the branches often 1 to 2 in. long, but retaining the ovate-lanceolate shape, the broad stem-clasping base, and apparently the colour and consistence of bracts rather than of true leaves. Sepals and petals lanceolate, ¾ in. long, the petals much narrower than the sepals. Labellum broadly obovate, more contracted at the base than in *G. cassythoides*, the erect part broadly cuneate, with two raised lines along the centre but glabrous between them, the two lines converging into a single one on the lamina, this lamina or upper spreading portion of the labellum very broad, the margins undulate-crisped, the surface of the whole labellum on each side of the smooth centre fringed with several lines of small linear calli rather than hairs, the lines transverse on the claw, longitudinal or diverging on the lamina. Anthers with the broad dorsal appendage of *G. cassythoides* but flatter, and the pollen distinctly

granular, in two masses deeply divided into somewhat distant oblong lobes, giving the mass somewhat of a horseshoe shape. Capsule 7 to 8 lines long. Seed winged.—*Ledgeria foliata*, or *Erythrorchis foliata*, F. Muell. Fragm. ii. 167.

Queensland. Pine river, *Fitzalan;* Rockingham bay, *Dallachy.*
N. S. Wales. Clarence river, *C. Moore* (in fruit only).

This fine species has precisely the pollen figured by J. D. Hooker in the *Cyrtosia* (*Erythrorchis*) *Lindleyana*, Ill. Himal. Pl. t. 22, and very different from that of *G. cassythoides;* but notwithstanding this apparently important difference in the two species, which would technically place them in different tribes of the order, it is difficult not to regard them as congeners, especially as both appear to have the exceptionally winged seeds, and probably the same remarkable habit.

20. EPIPOGUM, Gmel.

Sepals and petals free, nearly equal, narrow, erect or spreading. Labellum sessile, large, ovate, concave, with a short obtuse spur at the base. Column very short, the margin membranous. Anther lid-like, with a large thick terminal appendage. Pollen-masses 2, granular, attached to the gland by long caudicles.—Leafless terrestrial herbs, with a thick and fleshy or branching and coral-like rhizome. Scapes simple, ascending or erect, with a few scarious scales, not green. Flowers white (or sometimes pink?) in a terminal raceme usually nodding or pendulous.

The genus has very few species scattered in few individuals over a great part of the Old World. The only Australian one is also in tropical Asia and Africa.

1. **E. nutans,** *Lindl. in Journ. Linn. Soc.* i. 177. Stem ascending from a thick rhizome, 6 to 9 in. high, with 2 or 3 empty scarious bracts besides those which subtend the pedicels, all ovate-lanceolate, acute, 3 or 4 lines long. Flowers white, on short pedicels in a raceme occupying the greater part of the plant. Dorsal sepal and petals lanceolate, nearly 4 lines long, very thin, connivent, lateral sepals narrower. Labellum sessile on a broad base enclosing the column, as long as the sepals, broadly ovate and very concave, entire, the spur about 1 line long, the disk with 2 obscure rows of papillæ along the centre. Appendage at the end of the anther as large as the anther itself.—*Galera nutans*, Blume, Bijdr. 415, Coll. Orchid. t. 52, 54 E; *Podanthera pallida*, Wight Ic. t. 1759 (represented much larger in all its parts than the Australian specimen); *E. Guilfoylii*, F. Muell. Fragm. viii. 30.

N. S. Wales. Tweed river, *Guilfoyle,* the specimens agreeing precisely with some of those from East India, where the species appears to be widely scattered, as it has also been found in tropical Africa.

21. GASTRODIA, R. Br.

Sepals and petals united in a 5-lobed tube or cup, gibbous at the base under the labellum. Labellum shorter than the perianth, shortly adnate to it at the base along the centre, entire or with 2 obtuse auricles near the base, oblong, the margins undulate, the disk with 2

longitudinal raised lines or plates confluent upwards into a single one. Column elongated, the apex concave, with a membranous margin. Anthers lid-like, incumbent, very shortly stipitate, deciduous, the cells contiguous. Pollen granular. Stigma on a short protuberance at the base of the column.—Herbs parasitical on roots, leafless and not green. Scapes simple, erect, with short loosely sheathing scales. Flowers white, in a terminal raceme.

Besides the Australian species which is endemic, there is one in New Zealand, and a few from the Indian Archipelago and East India have been recently associated with it.

1. **G. sesamoides,** *R. Br. Prod.* 330. Stems 1 to 1½ ft. high, the sheathing scales loose and very obtuse or shortly acute, 2 to 3 lines long, approximate at the base of the stem, distant higher up. Raceme erect, usually 1 to 4 in. long, but sometimes much longer. Bracts scarious, very broad and obtuse, shorter than the pedicels. Flowers white or brownish outside, on pedicels of 2 or 3 lines. Perianth varying from 6 to 8 lines long, the lobes short and broad. Labellum scarcely shorter than the perianth, broadly oblong, very obtuse, much undulate. Column nearly as long as the labellum, angular, the basal stigmatic protuberance very prominent. Capsule obovoid-turbinate.—Endl. Iconogr. t. 5; Lindl. Gen. and Sp. Orch. 384; Hook. f. Fl. Tasm. ii. 31, t. 126 (the stigmatic protuberance overlooked by the artist); Reichb. f. Beitr. 44.

Queensland. Moreton bay, *W. Hill.*
N. S. Wales. Port Jackson to the Blue Mountains, *R. Brown, A. Cunningham,* and others. "Dry rocky situations and sandy forest grounds," *A. Cunningham.*
Victoria. Mountains of Upper Barwan, Apollo bay, M'Alister river, top of Mount William, *F. Mueller.*
Tasmania. Not uncommon in dense humid forests, *J. D. Hooker.*

22. POGONIA, Juss.

Petals and sepals free, erect connivent or somewhat open, equal or the petals smaller. Labellum erect, concave, undivided or lobed, the disk crested papillose or bearded. Column elongated, semiterete, usually angular or winged upwards. Anther lid-like, incumbent, sessile or shortly stipitate. Pollen granular, cohering in 2 entire or 2-lobed masses, free or attached to the rostellum by an elastic web.—Terrestrial herbs, forming a spherical tuber under ground. Flowering stems or scapes in the Australian section leafless besides scarious sheathing scales, erect, bearing a raceme (usually one-sided) of pendulous pedicellate flowers, sometimes reduced to a single flower, usually red (sometimes blue?). Leaves developed later than the flowers, solitary on separate stems, those of the Australian species not as yet observed.

The genus is a widely-spread one, having been originally founded on North American species. The section *Nervilia,* to which the Australian species belong, characterized by the separate development of the solitary leaf and of the flowering stems, is spread over tropical Asia and the Mascarene islands as well as those of the Archipelago; the

typical form or section *Eupogonia*, with leafy flowering stems, is North American, with one Japanese species.

Flowers solitary on the scape, 6 to 7 lines long. Labellum 3-lobed, the middle lobe contracted at the base, the disk papillose . . 1. *P. uniflora.*
Flowers 2 to 6 in the raceme, 7 to 8 lines long. Labellum shortly 3-lobed, the middle lobe broad at the base, the disk bearded . 2. *P. holochila.*
Flowers 2 or 3 in the raceme, nearly 1 in. long. Labellum quite entire, broadly obovate, the disk smooth . . . . . 3. *P. Dallachyana.*

1. **P. uniflora,** *F. Muell. Fragm.* v. 201. Flowering stem very slender, under 6 in. long, with few rather long loose sheathing scales and terminating in a single flower, blue according to Dallachy, pink according to F. Mueller. Pedicel very short, the junction with the stem marked by a small bract, wanting on some specimens. Sepals and petals 6 to 7 lines long, linear, rather acute, the lateral sepals somewhat broader or linear-lanceolate. Labellum nearly as long as the sepals, 3-lobed, the lateral lobes broadly triangular and obtuse, the middle lobe at least as long, ovate-oblong, obtuse, much contracted at the base; disk with a papillose line, narrow and double at the base, expanded upwards and extending partially on to the middle lobe. Column very slender at the base, broadly 2-winged upwards.

Queensland. Rockingham bay, *Dallachy.*

2. **P. holochila,** *F. Muell. Fragm.* v. 200. Flowering stems slender, 6 to 10 in. high, with a few rather long sheathing scarious bracts, the upper ones sometimes almost leafy at the end. Flowers 2 to 6, on slender pedicels of 1 to 3 lines, apparently pink, but like those of *P. uniflora* said by Dallachy to be blue. Bracts linear, rather long. Sepals and petals 7 to 8 lines long, the lateral sepals oblong-linear, the dorsal sepal and petals narrow-linear, the petals more contracted at the base. Labellum nearly as long as the sepals, broadly ovate, shortly sinuate-3-lobed, the lateral lobes broadly rounded, the middle one smaller, rather broader than long; disk with a bearded line extending to halfway along the middle lobe. Column slender, very shortly winged at the apex.

Queensland. Rockingham bay, *Dallachy.*—With a very few specimens are some of the young leaf-stems, with the leaf as yet insufficiently developed to judge of its form, but apparently cordate.

3. **P. Dallachyana,** *F. Muell. Herb.* Stems about 6 in. high, with 2 or 3 long loose sheathing scales. Flowers 2 or 3, on short pedicels crowded at the end of the stem. Bracts linear. Sepals said to be reddish, nearly 1 in. long, narrow-lanceolate, acuminate, the petals rather shorter and narrower. Labellum about $\frac{3}{4}$ in. long, broadly obovate, quite entire, contracted and embracing the column at its base; the disk without any raised papillose or bearded lines. Column 3 to 4 lines long, dilated and winged at the apex only.

Queensland. Rockingham bay, *Dallachy.*

Tribe 5. Neottieæ.—Anther erect or bent forward, persistent but free from the rostellum, sessile or stipitate. Pollen granular or mealy,

in 1 or 2 masses in each cell, with or without a caudicle. Terrestrial herbs with simple stems (except *Corymbis*) bearing 1 or more leaves or rarely leafless, and a simple spike raceme or single flower.

In the characters given of the following genera I have rarely mentioned the number of masses in which the pollen-grains cohere, for the cohesion is usually so slight that, in drying the specimens it is so far destroyed by pressure, that there are but very few cases where I have been able to observe the unbroken masses.

23. CORYMBIS, Thou.

(Corymborchis, *Thou.*)

Sepals and petals nearly equal, linear and dilated above the middle, all spreading or the dorsal one more erect. Labellum about as long, narrow, channelled, dilated at the end into a short recurved lamina, the disk with 2 longitudinal raised lines. Column elongated, terete, clavate at the end, with 2 erect lateral lobes, the stigma and rostellum acuminate, as long as the anther. Anther erect behind the stigma, acuminate, 2-celled; pollen granular, in 2 masses attached by a caudicle to a peltate gland.—Tall terrestrial herbs, with a fibrous rhizome. Leaves large, strongly ribbed. Flowers in short axillary somewhat corymbose panicles, the column persistent on the capsule.

The genus extends over tropical Asia and Africa, and appears also to be represented in Brazil. The Australian species extends over the Indian Archipelago and perhaps into East India.

The persistent column in this genus is said to elongate on the fruit after flowering. Of this the dried specimens show no sign. I have never seen the column on the capsule longer than the petals of the same species or variety. Possibly there may have crept in some error derived from the comparison of fruiting specimens of the very long-flowered Mauritius species with the shorter flowers of other species.

1. **C. veratrifolia,** *Reichb. f. in Flora* 1865, 184. Stems erect or somewhat climbing, attaining 5 to 10 ft. Leaves distichous, oblong-elliptical, acuminate, 9 to 18 in. long, very strongly ribbed, tapering into a short sheathing petiole. Flowers white, in axillary panicles not half so long as the leaves, erect and almost sessile along its spreading branches. Bracts linear-lanceolate, rarely $\frac{1}{2}$ in. long. Sepals and petals nearly $\frac{3}{4}$ in. long, the dorsal one rather broader at the base than the others, more erect and concave. Labellum rather longer than the sepals, broadly lanceolate, concave, about 2 lines broad, with entire margins, slightly dilated at the end into a short broad acute crisped lamina, not very perfect in the Australian specimens seen; the disk with 2 long raised lines, curving outwards on the lamina and ending in small callosities. Column at the time of flowering as long as the sepals, and not elongated afterwards, persisting on the oblong capsule after the sepals and petals have fallen.—*Corymborchis veratrifolia*, Blume, Orchid. 125, t. 42, 43.

Queensland. Rockingham bay, *Dallachy.*—Certainly the same species as the one gathered by Cuming in the Philippine islands, which appears to extend over the Indian Archipelago, and even to be identical with one gathered by Fritz Mueller at St. Catherine's in Brazil, but well distinguished by Blume from Thouars' original Mascarene and African species, which has the flowers above 2 in. long.

24. RAMPHIDIA, Lindl.

Flowers reversed. Lateral sepals erect, broader at the base, forming a hood over the labellum; dorsal sepal and petals reflexed. Labellum erect, sessile, undivided, concave. Column very short, with a narrow appendage on each side connecting the base of the anther and stigma into a cup. Anther erect. Pollen-masses granular. Rostellum bifid, as long as the anther.—Terrestrial herbs, with a creeping rhizome and ascending leafy stem. Flowers small, in a slender terminal point.

The genus is spread over East India and the Archipelago, the only Australian species having nearly the range of the genus.

1. **R. tenuis,** *Lindl. in Journ. Linn. Soc.* i. 182. Stems ascending to from 6 in. to 1 ft. Leaves on slender petioles, dilated at the base into a broad loose scarious sheath of ¼ to ½ in., the lamina elliptic-oblong to ovate-lanceolate, 1½ to 3 in. long, and usually 2 or 3 narrow empty sheathing-bracts above the leaves. Flowers very small, in a slender spike of 3 or 4 in., the bracts almost subulate, the rhachis as well as the ovaries and perianths loosely pubescent with short hairs, the rest of the plant glabrous. Lateral sepals rather broad, about 1¼ lines long. Labellum scarcely if at all connate with the column, nearly as long as the lateral sepals, broadly oblong, very concave, very obtuse, the margins and end inflexed, entire or slightly crisped. Anther and rostellum about equal in length and half as long as the labellum.

Queensland. Mackay river and Rockingham bay, *Dallachy.*—The specimens agree precisely with the one originally described by Lindley from the Philippine islands.

25. GOODYERA, R. Br.

Dorsal sepal and petals erect connivent and often connate; lateral sepals as long, spreading. Labellum sessile, embracing the column and sometimes adnate to it at the base, concave or almost saccate, undivided, often fringed or hairy inside at the base but without appendages. Column short, the stigma very concave or pouch-like, and connected with the anthers by lateral membranes, forming a second pouch between the rostellum and the anther, the rostellum entire and lanceolate or divided into two lobes. Anthers erect. Pollen-masses granular, attached to long caudicles.—Terrestrial herbs, with a creeping rhizome and weak ascending leafy stems. Flowers in terminal spikes, loose in the Australian species, dense and one-sided in the typical northern ones.

The genus is generally distributed over the tropical and temperate regions of the Old World. Of the two Australian species one appears identical with an Asiatic one, the other, as far as known, is endemic.

Rostellum divided into 2 long linear lobes without appendages at the base. Sepals and petals 3 to 4 lines long . . . . . 1. *G. viridiflora.*
Rostellum lanceolate, undivided, with a gland-like appendage on each side at the base. Sepals and petals 1½ lines long . . . 2. *G. polygonoides.*

1. **G. viridiflora,** *Blume, Orchid.* 41, 9 C. Stems ascending from 6 in. to 1 ft. Leaves on rather long petioles, dilated at the base into a loose scarious sheath, the lamina ovate-lanceolate or ovate-oblong, acute or shortly acuminate, sometimes slightly cordate at the base, 1½ to 3 in. long; and usually 2 or 3 empty scarious bracts above the leaves. Flowers rather distant, in a spike of 2 to 4 in., the bracts broad, membranous, subulate-acuminate, often as long as the ovary. Dorsal sepal and petals 3 to 4 lines long, the petals broader and more obtuse than the sepal, and usually cohering to it; lateral sepals obliquely lanceolate. Labellum as long as the sepals, broadly ovate, very concave, rather copiously fringed inside with short cilia near the base. Rostellum divided into linear-lanceolate erect lobes as long as the long acuminate anther, stigma pouch-like, almost truncate.—*Neottia viridiflora*, Blume Bijdr. 408; Lindl. Gen. and Sp. Orch. 494; *Georchis cordata*, Lindl. Gen. and Sp. Orch. 496; *Georchis viridiflora*, F. Muell. Fragm. viii. 29.

Queensland. Rockingham bay, *Dallachy.*—This species certainly belongs to the genus *Georchis* of Lindley, which Blume appears to be right in reducing to *Goodyera*, unless the latter be restricted to the original *G. repens* and *G. pubescens*. Reichenbach identified the specimens with the *G. cordata*, Lindl., from Sikkim, which only differs in the leaves being rather more cordate at the base, and it also appears to be identical with Blume's plant from Java, of which, however, we have no specimen.

2. **G. polygonoides,** *F. Muell. Fragm.* viii. 29. Stems from a creeping rhizome ascending, about 8 in. long including the raceme. Leaves petiolate above the loose scarious sheath, oblong-lanceolate, 1½ to 3 in. long. Spike loose, the flowers small on a long ovary attenuate upwards. Bracts lanceolate, about as long as the ovary. Sepals and petals about 1½ lines long, ovate or ovate-lanceolate, the sepals acute, the petals thin and adnate to the dorsal sepal. Labellum not very broad, acutely acuminate, rather longer than the sepals, very concave, without hairs or appendages inside. Column short, the stigma membranous, large concave and undulate, but not pouch-like. Rostellum lanceolate, undivided, with an almost gland-like appendage on each side at the base on the margin of the membrane connecting the stigma and anther.

Queensland. Rockingham bay, *Dallachy.*—A single specimen in Herb. F. Mueller. The aspect of the plant is that of *Rhomboda*, Lindl., the gland-like or crest like appendages at the base of the rostellum those of some species of *Hetæria* (*Etæria* or *Ætheria*), Blume; but the labellum has not the internal appendages of those two genera. Neither of the above species agree precisely in these technical characters with the typical *Goodyeræ*, but probably a general revision upon good materials would require the extension of the genus even beyond the limits proposed by Blume.

26. SPIRANTHES, Rich.

Dorsal sepal and petals erect, connivent or slightly coherent in an upper lip or galea, or the ends alone spreading. Lateral sepals free and more spreading, all nearly equal. Labellum sessile or nearly so, embracing the column by its broad base, undivided, often dilated at the

end, the disk with 2 tubercles at the base. Column short, with a small erect appendage or lobe on each side. Anther erect; pollen-masses 4, granular or mealy, sessile on a gland. Rostellum short, bifid.—Terrestrial herbs, with oblong underground tubers or thick clustered fibres. Flowers small, spirally arranged in a terminal spike. Stems leafy, or sometimes at the time of flowering with sheathing scales only.

A considerable genus generally diffused over the temperate and tropical regions of the globe; the only Australian species has a wide range over Asia and a part of Europe.

1. **S. australis,** *Lindl. Gen. and Sp. Orch.* 464. Rhizome short, with a cluster of thick fibres or oblong tubers. Stem glabrous below the inflorescence, 6 in. to above 1 ft. high. Lower leaves linear or narrow-lanceolate, varying in length from 1½ to 4 in. as well as in breadth, the upper ones reduced to sheathing scales. Spike spiral, very dense or rather loose. Flowers sessile, generally described as pink with a white labellum; bracts usually about as long as the ovary, the rhachis ovary and sometimes the perianths pubescent. Sepals and petals varying from 1½ to 2 lines in length, the lips spreading, the lateral sepals obscurely dilated near the base but not saccate. Labellum as long as the sepals, the broad base quite sessile or sometimes appearing raised on a very short claw with a tubercle on each side, concave, often slightly contracted above the column, then expanded into a short broad undulate crisped or almost fringed lamina. Anther scarcely acuminate but much longer than the rostellum.—Wight Ic. t. 1724; Hook. f. Fl. Tasm. ii. 15; Reichb. Ic. Fl. Germ. t. 476; *Neottia australis,* R. Br. Prod. 319.

Queensland. Brisbane river, Moreton bay, *F. Mueller;* Armidale, *Riley.*
N. S. Wales. Port Jackson, *R. Brown, A. Cunningham, Woolls;* Blue Mountains, *Miss Atkinson;* New England, *C. Stuart;* Macleay river, *Fitzgerald;* Clarence river, *Beckler;* Richmond river, *Fawcett,* but in most places said to be very rare.
Victoria. Mitta-Mitta, Broadribb and Snowy rivers and Lake Omeo, *F. Mueller;* Portland, *Crouch.*
Tasmania. Circular Head, *Gunn;* Cheshunt, *Archer;* Swanport, *Story.*

The species is also in New Zealand and in a great part of tropical and temperate Asia, extending to some parts of Europe.

27. CALOCHILUS, R. Br.

Dorsal sepal erect, rather broad, concave; lateral sepals about as long, broadly lanceolate, spreading; petals much shorter, broadly falcate. Labellum as long or longer, undivided, contracted at the base, the margin and whole surface densely fringed except a narrow terminal point or ligula. Column short, with a rather broad wing more or less produced behind the anther but not beyond it. Anther bent forward at the base, usually recurved towards the end, obtuse or obtusely acuminate or rostrate. Pollen-masses granular. Rostellum much shorter than the anther.—Terrestrial glabrous herbs, with ovoid underground tubers. Leaf usually solitary, long and narrow, but usually 2 or 3 erect almost leaf-like sheathing bracts on the stem. Flowers few in a

terminal raceme, green or yellowish, with more or less of purple especially the labellum.

The genus is limited to Australia. In the column it is nearly allied to *Thelymitra* but differs widely in the perianth.

Anther rostrate. Column-wing quite open in front, with a gland on each side within its anterior angles or lobes . . . . . 1. *C. campestris.*
Anther shortly rostrate. Column-wing usually with a gland on each side as in *C. campestris*, and open in front, but connected by a transverse raised line across the base of the labellum . . 2. *C. Robertsoni.*
Anther very obtuse. Column-wing without any gland, open in front. Labellum with 2 short longitudinal intramarginal erect plates or auricles near the base . . . . . 3. *C. paludosus.*

F. Mueller, Fragm. v. 96, proposes to unite all the species of this genus into one under the name of *C. australianus.*

1. **C. campestris,** *R. Br. Prod.* 320. Stem usually rather stout, from under 1 ft. to above 1½ ft. high, with a rather long leaf and 3 to 5 flowers, but sometimes with the habit of *C. paludosus.* Sepals in the typical form 4 to 5 lines long, the petals much shorter. Labellum ½ in. long or more, obovate or obovate-oblong, the margins and surface covered with long purple fringes except near the base where (in the same typical form) there is a raised plate or thickened surface quite smooth and extending more or less along the centre of the narrow part of the labellum, and the end is produced into a linear or lanceolate smooth often flexuose point varying much in length. Column-wings rather broad and dilated in front into a variously-shaped lobe or angle with a dark-coloured gland inside, the two wings not at all connected in front. Anther bent forward at the base, recurved and acuminate or rostrate upwards.—Lindl. Gen. and Sp. Orch. 459; Bot. Mag. t. 3187; Hook. f. Fl. Tasm. ii. 15, t. 106 A; Reichb. f. Beitr. 21; *C. herbaceus,* Lindl. l.c.

Queensland. Shoalwater bay, *R. Brown* (belonging probably to the var. *grandiflora*).
N. S. Wales. Port Jackson, *R. Brown, Woolls.*
Tasmania. Rocky Cape, Woolnorth, *Gunn;* Port Sorell, *Archer;* Huon river, *Oldfield;* Oyster Cove, *Milligan;* Southport, *C. Stuart.*

Var. *grandiflora.* Flowers 1 to 3, larger than in the common form, and altogether resembling *C. paludosus,* the labellum covered with fringes or linear calli from the base, but without the intramarginal appendages of that species, and the glands of the column-wings as in *C. campestris.*—Moreton island, *M'Gillivray;* also some specimens from Port Jackson, *Woolls;* and probably Macleay river, *C. Moore.* Brown's original Port Jackson specimens belong to the above-described typical forms, and correspond with several of Woolls', as also with the majority at least of Tasmanian ones, with Lindley's *C. herbaceus,* and with the figure in the Botanical Magazine from a drawing made in Tasmania.

2. **C. Robertsoni,** *Benth.* A stout species, with the habit of the larger specimens of *C. campestris,* but the leaf usually broader. Sepals acuminate, fully ½ in. long in the specimens seen; petals also acuminate, more than half as long. Labellum fringed all over, the terminal smooth point short. Column-wings with a more or less distinct gland on each side in front as in *C. campestris,* but the two wings connected at the

base by a transverse raised plate across the base of the labellum, of which I see no trace in the two other species. Anther shortly and obtusely rostrate.

Victoria. Heaths on Glenelg river, *Robertson;* Mount M'Ivor, *Herb. F. Mueller;* Bendigo, *Oldfield;* and probably a specimen from Dandenong, *F. Mueller*, with the flower too far advanced for examination.

3. **C. paludosus,** *R. Br. Prod.* 320. Usually more slender than *C. campestris*, with a long leaf and only 2 or 3 rarely 4 flowers, often but not always larger than in that species. Sepals usually 7 to 8 lines long; petals not half so long, strongly veined. Labellum covered with the long fringes or cilia, shorter and much crowded towards the base, with 2 longitudinal but short and much raised plates near the base resembling auricles but intramarginal, not strictly marginal as figured (C 3) in Endlicher's plate, the terminal smooth point of the labellum usually long flexuose and linear. Column-wing produced behind the anther to about its length, broadly rounded in front on each side, without the glands of *C. campestris*. Anther as broad as long, very obtuse, neither acuminate not rostrate.—Lindl. Gen. and Sp. Orch. 459; Endl. Iconogr. t. 14; Reichb. f. Beitr. 22.

N. S. Wales. Port Jackson, *R. Brown, Woolls;* Hunter's river, *R. Brown;* Blue Mountains, *Miss Atkinson.*

28. THELYMITRA, Forst.

Sepals and petals all nearly equal and spreading. Labellum similar to the sepals and petals and spreading with them. Column erect, rather short, very broadly winged, the wings either reaching to the base of the anther with an erect usually thick entire lateral lobe or appendage on each side of it, or dilated at the end and united behind the anther, sometimes extended into a broad lobed hood over it, the lateral lobes often penicillate or crested, the wings below the anther embracing the column but open in front except at the base where they are united and sometimes are produced into a short tooth between the labellum and column. Anther erect or bent forward between the lateral lobes or under the hood; the cells distinct, the connective produced into a broad appendage sometimes elongated and entire or shortly bifid; pollen-masses granular, without any or with a very small caudicle.—Terrestrial herbs, glabrous or very rarely pubescent on the leaf-sheaths, with ovoid underground tubers. Leaf solitary, usually with a rather long sheath, the lamina linear, lanceolate or rarely almost ovate, often rather thick, but not terete; empty bracts 1 or 2 along the stem. Flowers usually several in a terminal raceme, sometimes reduced to 1 or 2, blue purple red or yellow, occasionally with white varieties.

One of the Australian species extends over New Zealand, New Caledonia, and the Indian Archipelago, and there are three or perhaps four species peculiar to New Zealand; the genus is otherwise endemic in Australia. It is remarkable for the labellum perfectly resembling and taking its place as one of the petals, and quite detached from the column, from which it is separated by the annular base of the wing.

Sect. 1. **Cucullaria.**—*Column-wing produced behind and beyond the anther into a broad hood over it, variously lobed or fringed at the top.*

Hood with the 2 extreme lateral lobes penicillate (bearing a tuft of cilia). Flowers blue, purple or white.
- Hood with 3 short denticulate or fringed lobes between the penicillate ones and shorter than them.
  - Middle lobe of the hood crested on the back . . . . . 1. *T. ixioides.*
  - Middle lobe of the hood smooth on the back . . . . . 2. *T. canaliculata.*
- Hood with 1 entire or bifid lobe between the penicillate ones, usually longer than them, broad and concave.
  - Hood densely crested on the back. Leaf very broadly lanceolate . . . . . 3. *T. crinita.*
  - Hood smooth on the back. Leaf linear or linear-lanceolate.
    - Tall robust plant. Leaves usually rather broad. Middle lobe of the hood usually 2-fid and papillose-denticulate . 4. *T. aristata.*
    - Plant usually slender, with narrow leaves. Middle lobe of the hood scarcely notched and entire . . . . . 5. *T. longifolia.*

Hood with the 2 extreme lateral lobes cristate, but without tufts of cilia. Flowers yellow, often spotted with purple.
- Leaf villous, broad. Middle lobe of the hood undivided, cristate at the end, and a transverse crest inside at the base . . 6. *T. villosa.*
- Leaf glabrous, narrow. Middle lobe of the hood 3-fid without the internal crest . . . . . 7. *T. tigrina.*

Hood deeply fringed with linear lobes, with a club-shaped appendage on the back. Flowers yellow or brown.
- Dorsal appendage of the hood crested at the end. Perianth-segments narrow-lanceolate . . . . . 8. *T. stellata.*
- Dorsal appendage of the hood smooth tubercular or notched at the end. Perianth-segments broadly lanceolate . . . . . 9. *T. fusco-lutea.*

Sect. 2. **Macdonaldia.**—*Column-wing broadly produced behind the anther, but much shorter than it, and not hood-shaped. Slender flexuose herbs, with the habit of* T. antennifera.

Two extreme lateral lobes of the truncate column-wing prominent and denticulate or fringed. Flowers pink . . . . . 10. *T. carnea.*

Column-wing broadly truncate, slightly sinuate, but the lobes scarcely prominent. Flowers yellow . . . . . 11. *T. flexuosa.*

Sect. 3. **Biaurella.**—*Column-wing not produced behind the anther, but with 2 prominent erect lateral lobes as long as or longer than the anther, and often connected by a short crest behind it.*

Habit of *T. carnea*. Flowers yellow. Lateral lobes of the column long, erect, and spathulate . . . . . 12. *T. antennifera.*

Habit nearly of *T. carnea*. Flowers deep-coloured (purple or red?)
- Lateral lobes of the column oblong, erect, curved, denticulate, not spathulate.
  - Leaf-sheaths glabrous . . . . . 14. *T. Macmillani.*
  - Leaf-sheaths pubescent . . . . . 14. *T. variegata.*

Habit of *T. ixioides*. Flowers blue.
- Lateral lobes of the column longer than the anther, involute . 15. *T. venosa.*
- Lateral lobes of the column not exceeding the anther, oblong or lanceolate, convolute or thickened . . . . . 16. *T. cyanea.*

Sect. 1. Cucullaria.—Column-wing produced behind and beyond the anther into a broad hood over it, variously lobed or fringed at the top.

1. **T. ixioides,** *Sw. in K. Akad. Stockh. Handl.* 1800, 228, t. 3 L, *and in Schrad. New. Journ.* 58, t. 1 L. Stem usually above 1 ft. high, with 1

long linear or linear-lanceolate flat or channelled leaf, and 1 or 2 shorter ones, and several flowers pedicellate in a raceme of 4 to 6 in., but like several other species very variable in stature and number of flowers, sometimes slender with 1 or 2 flowers like the var. *pauciflora* of *T. longifolia*. Sepals petals and labellum elliptical-oblong, 9 to 10 lines long in the common Port Jackson variety, smaller in others especially the western ones. Column about 2 lines long, the broad wing extending behind and beyond the anther, shortly adnate to it at the base, and forming a broad hood over it with 2 lateral lobes at the angles shortly linear erect and bearing a dense tuft of white cilia, and 3 rather shorter lobes between them, all truncate and denticulate, and the central one with a crest of several rows of dorsal calli. Anther produced into an incurved point much longer than the rostellum.—Sm. Exot. Bot. i. 55, t. 29; R. Br. Prod. 314; Lindl. Gen. and Sp. Orch. 522; Hook. f. Fl. Tasm. ii. 6, t. 103 B; Reichb. f. Beitr. 7; *T. iridioides*, Sieb., and *T. juncifolia*, Lindl. l.c.; *T. lilacina*, F. Muell., referred by Lindl. in Linnæa xxvi. 242 to *T. canaliculata*.

Queensland. Archer's station, Moreton bay, *Leichhardt.*
N. S. Wales. Port Jackson, *R. Brown*, *Sieber*, *n.* 168. *Woolls*, and others; New England, *C. Stuart;* southward to Twofold bay, *F. Mueller.*
Victoria. E. Gipps Land, *Walter;* near Brighton, rare, *F. Mueller.*
Tasmania. Abundant throughout the Colony, *J. D. Hooker*, and others.
W. Australia. Swan river, *Drummond*, *Maxwell;* Upper Kalgan river, Monjerup and Peronjerup, *F. Mueller;* Lake Maxwell and Peronjerup ranges, *Oldfield.*

These Western specimens have usually smaller flowers and rather narrower, more channelled leaves than most but not all of the Eastern ones. They all appear to me to have the middle lobe of the column hood-crested on the back as in the typical *T. ixioides;* but possibly on the living plant characters might be found to connect them rather with *T. canaliculata* than with *T. ixioides*. They certainly include *T. campanulata*, Lindl. Swan Riv. App. 49, Gen. and Sp. Orch. 521.

2. **T. canaliculata,** *R. Br. Prod.* 314. Habit and few rather small flowers of the slender narrow-leaved forms of *T. ixioides*, and the floral characters the same except that the central lobe of the column-hood is broader, more external, and though much denticulate has no dorsal crest.—Lindl. Gen. and Sp. Orch. 522; Reichb. f. Beitr. 7.

W. Australia. King George's Sound, *R. Brown;* Albany, *F. Mueller.*—The station is given in the Prodromus as (T) by some mistake, probably typographical. The specimens in Herb. Brown and Bauer's drawing all give King George's Sound. *T. cornicina*, Reichb. Beitr. 54, also from King George's Sound, appears to me to be the same species, which further observation of the fresh plant may prove to be a variety only of *T. ixioides*.

T. media, R. Br. Prod. 314, Reichb. f. Beitr. 7, from Port Jackson, *R. Brown*, with the same aspect as some varieties of *T. ixioides*, or of *T. longifolia*, is like *T. canaliculata* distinguished from the former by the want of any crest on the back of the central lobe of the column-hood, and this crest is not figured in the plate of *T. ixioides* in Fl. Tasm. I have not been able to examine Brown's specimens of *T. media*, but in all those resembling it both from Port Jackson and from Tasmania I have uniformly found the dorsal crest.

T. epipactoides, F. Muell. Fragm. v. 174, from Port Philip, which I have not seen, would appear from the character given to be a broad-leaved variety of *T. ixioides*, or of *T. canaliculata*.

T. campanulata, Endl. in Pl. Preiss. ii. 14, which I have not seen, is referred by Reichb. f. Beitr. 55, to *T. canaliculata*.

3. **T. crinita,** *Lindl. Swan Riv. App.* 49, *Gen. and Sp. Orch.* 521. Usually above 1 ft. high, the leaf ovate-lanceolate or very broadly lanceolate, 1½ to 3 in. long. Raceme loose, of several rather large blue flowers. Sepals and petals varying from ½ to ¾ in., usually obtuse. Column-wing produced behind and beyond the anther into a broad hood, the 2 extreme lateral lobes as in *T. longifolia*, bent forward and penicillate but shorter than the centre, which is broadly 2-lobed as in that species but very densely cristate on the back with shortly linear papillæ or calli.—Endl. in Pl. Preiss. ii. 14; *T. ovata*, F. Muell. Fragm. vi. 84.

W. Australia. Swan river, *Drummond, 1st coll., Preiss, n.* 2194; Vasse, Gordon, and Kalgan rivers, *Oldfield;* King George's Sound, *F. Mueller;* Lake Muir, *Muir.*

F. Mueller appears to have distinguished his *T. ovata* from the colour of the tuft of ciliæ on the lateral lobes of the column-hood, violet instead of white, which, however, appears to be a very inconstant character.

4. **T. aristata,** *Lindl. Gen. and Sp. Orch.* 521. Usually tall and leafy, the lower leaf linear-lanceolate, rather broad and sometimes very long, and two of the empty sheathing bracts long and loose with leafy points. Flowers several, like those of the stouter forms of *T. ixioides* and *T. longifolia*. Column-wings produced behind and beyond the anther into a broad hood over it, the 2 extreme lateral lobes penicillate, bent forward, and shorter than the centre as in *T. longifolia*, but these 2 central lobes more deeply divided than in that species and denticulate or crested on the edge, and usually pale-coloured in the dried state.—*T. grandis*, F. Muell.; *T. angustifolia*, Hook. f. Fl. Tasm. ii. 5, not of R. Br.

Victoria. Wendu vale, *Robertson;* Melbourne, *Adamson;* Darebin Creek, *F. Mueller.*

Tasmania. Circular Head, &c., *Gunn;* South Huon river, *Oldfield;* Southport, *C. Stuart;* Rocky Cape, M'Quarrie harbour, *Milligan.*

S. Australia. Mount Gambier, Rivoli bay, Bugle ranges, *F. Mueller.*

W. Australia. Swan river, *Drummond, 1st coll.*; Kalgan river, *Oldfield;* between Esperance bay and Russell Range, *Dempster.*—These Western specimens which represent the *T. macrophylla*, Lindl. Swan Riv. App. 49; Gen. and Sp. Orch. 519, seem to connect the species with the typical *T. longifolia*, according to Reichb. f. Beitr. 56. Preiss's n. 2187, referred by Endl. in Pl. Preiss. ii. 14, to *T. macrophylla*, is not to be distinguished from *T. crinita.*

5. **T. longifolia,** *Forst. Char. Gen.* 98, t. 49. Stature and foliage varying more even than that of *T. ixioides*. What we may consider as the typical form is rather tall, with a long narrow leaf and a raceme of several rather large flowers nearly represented by *T. nuda* and *T. angustifolia* of Brown, whilst his *T. pauciflora* is a smaller slender form with very few (often only one) smaller flowers, and some northern specimens are tall and vigorous with broader leaves coming very near to those of *T. aristata*, but none of these in the dried state can well be sorted into distinct varieties, and none of them show any difference in the perianth from that of *T. ixioides*, the colour variously described as blue, lilac or pink. Column-wing produced behind and over the anther into a broad

hood, usually conspicuous for its dark colour, the 2 extreme lateral lobes penicillate as in *T. iridoides*, but bent forward and shorter than the broad centre, which is entire emarginate or shortly 2-lobed with the margin entire and smooth.—*T. Forsteri*, Sw. in K. Akad. Stockh. Handl. 1800, 228, and in Schrad. N. Journ. i. 57; Lindl. Gen. and Sp. Orch. 520; *T. nuda*, R. Br. Prod. 314, Lindl. l.c.; Hook. f. Fl. Tasm. ii. v. t. 103 A; Reichb. f. Beitr. 8; *T. pauciflora*, R. Br. l.c. Reichb. f. l.c.; *T. arenaria* and *T. versicolor*, Lindl. l.c. 519, 520; *T. graminea*, Lindl. Swan Riv. App. 49, Gen. and Sp. Orch. 521.

Queensland. Endeavour river, *Banks and Solander;* Port Bowen, *R. Brown;* Archers station, Moreton bay, *Leichhardt;* Rockingham bay, *Dallachy;* Armidale *Perrot;* also from the *Burdekin Expedition.*

N. S. Wales. Port Jackson, *R. Brown, Woolls;* New England, *C. Stuart.*

Victoria. Wendu Vale, *Robertson;* and numerous stations from Melbourne to the Grampians, Wimmera, and the Murrumbidgee, *F. Mueller,* and others.

Tasmania. Port Dalrymple, *R. Brown;* abundant throughout the Colony, *J. D. Hooker,* and others.

S. Australia. Mountains around St.Vincent's Gulf, *F. Mueller, Behr;* Spencer's Gulf, *F. Mueller.*

W. Australia. Swan river, *Drummond, 1st coll.*; Hampden, *Clarke.*

There is some confusion about Brown's *T. angustifolia* and *T. canaliculata*, owing to his having in the first instance given the former name to the Western plant he afterwards published as *T. canaliculata*, and in his Prodromus *T. angustifolia* is marked (J) for Port Jackson, and *T. canaliculata* (T) for tropical Australia; whilst his herbarium shows that it is *T. angustifolia* that ought to have been marked (T) and *T. canaliculata* from King George's Sound should have been marked (M). The Port Bowen specimens of *T. angustifolia* have the central lobe of the hood sometimes slightly denticulate, showing an approach in this respect to *T. aristata*, but not at all in the foliage; on the other hand, some of the New England and Queensland specimens of *T. longifolia* have the broad leaves nearly of *T. aristata*, but not at all the column-hood. A few specimens from near King George's Sound, *F. Mueller*, and a very few from other localities, have the central lobe of the column-hood more distinctly 2-lobed, but are not otherwise different.

6. **T. villosa,** *Lindl. Swan. Riv. App.* 49, t. 8 C, *Gen. and Sp. Orch.* 521. A rather stout species, usually above 1 ft. high, remarkable for its ovate obovate or ovate-oblong leaf, villous on both sides especially underneath, as well as the sheath, the rest of the plant including the empty sheathing bracts glabrous. Flowers rather large, yellow dotted with purple, in a loose raceme. Sepals and petals acute, usually nearly ¾ in. long. Column-wings produced behind and over the anther into a broad hood, the extreme lateral lobes densely cristate or fringed and curved forward but not white-penicillate, the centre prominent, broad and entire as in *T. longifolia*, but densely cristate-dentate on the back at the end, and also with a transverse crest of small calli inside at its base.—*T. pardalina*, F. Muell. Fragm. v. 94.

W. Australia. Swan river, *Drummond, 1st coll.*; Stirling Range, *F. Mueller;* Perongerup, *Mr. Knight;* eastward to Esperance bay and Cape Le Grand, *Maxwell.*

7. **T. tigrina,** *R. Br. Prod.* 315. Stems slender, attaining about 1 ft., the leaf very narrow and channelled. Flowers small, 2 to 4 in the raceme "yellow and spotted." Sepals and petals about 4 lines long. Column-wing broad, produced behind and beyond the anther, the ex-

treme lateral lobes oblong, densely papillose-bearded but not with the white cilia of the penicillate species, the three middle lobes broader, shorter, fringed with similar papillæ or calli.—Lindl. Gen. and Sp. Orch. 521.

W. Australia. King George's Sound, *R. Brown;* Swan river, *Drummond, 3rd coll. n.* 308.

8. **T. stellata,** *Lindl. Swan Riv. App.* 49, *Gen. and Sp. Orch.* 519. A stout species of 1 to 1½ ft. with an ovate-lanceolate or oblong-lanceolate leaf, closely allied to *T. fusco-lutea* and possibly a variety only. Sepals and petals narrow-lanceolate, acuminate, about 1 in. long. Column-hood at least 3 lines long and deeply fringed as in *T. fusco-lutea*, but the dorsal club-shaped appendage is densely callose-crested at the end, and the fringe of the hood rather more irregular, two of the long teeth sometimes much thicker than the others. Anther with a long terminal appendage.

W. Australia. Swan river, *Drummond, 1st coll.*

9. **T. fusco-lutea,** *R. Br. Prod.* 315. A stout glabrous species of 1 to 1½ ft., rarely smaller and more slender. Leaf ovate-lanceolate or oblong-lanceolate, shortly acuminate, 2 to 4 in. long. Raceme of few rather large flowers. Sepals and petals broadly oblong-lanceolate, acute or shortly acuminate, usually about ¾ in. long or rather more, yellow with dark brown spots. Column exceedingly short below the anther, the wing produced behind and beyond the anther into a broad hood nearly 3 lines long, deeply cut into a fringe of long linear lobes, shortly crested or bearded on the back in the centre, and with a dorsal club-shaped appendage proceeding from near the base, rather shorter than the fringe, entire slightly rugose or notched at the end but not crested. Anther ending in a thick obtuse fleshy appendage, long but shorter than the hood.—Lindl. Gen. and Sp. Orch. 519; Reichb. f. Beitr. 10.

S. Australia. Onkaparinga, *F. Mueller.*

W. Australia. King George's Sound, *R. Brown;* Swan river, *Drummond, 1st coll.*; Vasse river, *Pries.*

A drawing of Bauer's, of which there is a tracing in Herb. Lindley, represents the appendage of the hood as notched at the end, but as it is as broad in the side view as in the front view it must have been thick and club-shaped; in the finished coloured drawing in the British Museum it is represented as flatter more deeply 2-lobed and denticulate. Reichenbach f. therefore, thinking that Drummond's plant described by Lindley, in which the appendage is entire, must be specifically distinct, has, Beitr. p. 55, characterized it as new under the name of *T. Benthamiana*. Brown's own specimen has the flowers too far advanced for examination, but one from Capt. King, labelled by Brown as *T. fusco-lutea*, appears to me without doubt to be the same as Drummond's plant. Probably the dorsal appendage is variable and its shape exaggerated in Bauer's finished drawing.

Sect. 2. Macdonaldia.—Column-wing broadly produced behind the anther but much shorter than it, and not hood-shaped.

10. **T. carnea,** *R. Br. Prod.* 314. Stem slender, often flexuose, from under 6 in. to near 1 ft. high, with 1 to 3 pink flowers, the leaf narrow-

linear and 1 or 2 bracts sometimes leaf-like. Sepals and petals oval-elliptical or oblong, obtuse, usually about 4 lines long, less veined than in *T. ixioides* and its allies. Column nearly half as long as the perianth, the wings very broadly truncate and connected behind the anther but shorter than it, the 2 extreme lateral lobes short broad and denticulate, the intermediate 2 lobes very broad and scarcely prominent. Anther-connective produced beyond the cells, but broad and obtuse.—Lindl. Gen. and Sp. Orch. 519; Hook. f. Fl. Tasm. ii. 5, t. 102 B; Reichb. f. Beitr. 9.

N. S. Wales. Port Jackson, *R. Brown, Woolls.*
Victoria. Wendu Vale, *Robertson;* Port Phillip, *C. French.*
Tasmania. Hobarton, *Gunn;* Georgetown and Cheshunt, *Archer;* Southport, *C. Stuart.*
S. Australia. Lofty Range, *F. Mueller.*

11. **T. flexuosa**, *Endl. Nov. Stirp. Dec.* 23. Stems slender but usually wiry and flexuose, 6 to 9 in. high. Leaf narrow-linear, rather thick, and the empty bracts sometimes leaf-like. Flowers 1 or 2, yellow, smaller than in the other species, the sepals and petals obtuse and scarcely more than 3 lines long. Column-wing continued behind the anther but only about half its length, broadly truncate and very shortly and equally 3-lobed or rather 3-crenate, the lobes quite entire and rather thin, or the middle one broader and notched, the wings forming in front a loose cup nearly ½ line long, the sides broad and rounded almost into lateral lobes. Anther produced into a broad thick pubescent appendage.—*Macdonaldia Smithiana*, Gunn, and *M. concolor*, Lindl. Swan Riv. App. 50, t. 9 B, Gen. and Sp. Orch. 385; Endl. in Pl. Preiss. ii. 4; *Thelymitra Smithiana*, Hook. f. Fl. Tasm. ii. 4, t. 101 B.

Victoria. Port Phillip, *C. French;* Mount Abrupt and Bunip Creek, *F. Mueller.*
Tasmania. Circular Head, *Mrs. Smith;* Georgetown, *Archer;* Southport, *C. Stuart.*
W. Australia. *Drummond, 1st coll., 3rd coll. n.* 309; Albany and Upper Hay river, *F. Mueller;* Thistle Cove, *Maxwell.*

Sect. 3. Biaurella, *Lindl.*—Column-wing not produced behind the anther, but with 2 lateral erect lobes or appendages longer than the anther and often connected by a short crest behind it.

12. **T. antennifera,** *Hook. f. Fl. Tasm.* ii. 4, t. 101 A. Stems erect, wiry, flexuose, 6 in. to 1 ft. high, with the narrow-linear rather thick leaves of *T. carnea* and *T. flexuosa*. Flowers 1, 2 or rarely 3, yellow, of the size of those of *T. carnea* or rather larger. Sepals and petals obtuse or acute, 4 to 6 lines long. Column-wings adnate to the anther as high as the cells but not produced behind it, with erect dark-coloured broadly spathulate lateral appendages, longer than the anther, very obtuse or emarginate. Anther produced into a broad thick concave appendage, bent forward, very obtuse, rugose-pubescent outside.—*Macdonaldia antennifera*, Lindl. Swan Riv. App. 50; Gen. and Sp. Orch. 385; Endl. in Pl. Preiss. ii. 4.

Victoria. Wendu Vale, *Robertson;* Portland, *Allitt;* Port Phillip, *Gunn;* . .ighton, *F. Mueller;* Grampians, *S. Fisher.*

Tasmania. Georgetown, *Archer.*
S. Australia. Encounter bay, *Whittaker;* Tamunda and Macclesfield, *F. Mueller.*
W. Australia. King George's Sound to Swan river, *Wakefield, F. Mueller, Drummond, 1st coll., 4th coll. n.* 230, *5th coll. n.* 116, *Preiss, n.* 2181, and many others; eastward to Bremer and Esperance bays, *Maxwell, Dempster.*

13. **T. Macmillani,** *F. Muell. Fragm.* v. 93. Habit and foliage of *T. antennifera*, but perhaps nearer allied to *T. variegata.* Sepals and petals about ½ in. long, apparently deep coloured (red?). Column-wing produced into 2 lateral diverging lobes as long as the anther, curved and slightly denticulate at the end, separated by an acute sinus behind the anther, without any dorsal crest.

Victoria. Port Phillip, *M'Millan;* a single specimen in Herb. F. Mueller.—The species requires further investigation and may prove to be an abnormal form of one of the allied species or possibly a hybrid.

14. **T. variegata,** *Lindl. in Herb. Benth.* Stem not very stout, 1 ft. high or rather more, with 2 to 4 large flowers. Leaf with a villous sheath, the lamina usually glabrous, linear, much dilated at the base and often undulate. Sepals and petals lanceolate, shortly acuminate or acute, ¾ to 1 in. long, dark-coloured and variegated. Column nearly 3 lines long to the anthers, the broad wings deeply coloured, not produced behind the anthers, but with erect lateral lobes nearly 2 lines long, oblong, obtuse but not spathulate, connected by a crest behind the anther. Anther-cells short, the connective produced into a broad obtuse appendage as long as the lateral lobes of the column.—*Macdonaldia variegata* and *M. spiralis*, Lindl. Swan Riv. App. 50, Gen. and Sp. Orch. 385, 386; *Thelymitra porphyrosticta*, F. Muell. Fragm. v. 97.

W. Australia. Swan river, *Drummond, 1st coll.*; Kalgan river, *Maxwell.*—The form *spiralis* is scarcely a distinct variety, the undulate or twisted base of the leaf occurs in some of the larger as well as in the smaller and more slender specimens.

15. **T. venosa,** *R. Br. Prod.* 314. Habit of some of the rather larger forms of *T. ixioides.* Stem 1 to 2 ft. high, with a long narrow leaf and a raceme of 6 to 10 blue flowers. Sepals and petals ½ to ¾ in. long, veined as in *T. ixioides.* Column broadly winged, with 2 long linear obtuse erect lateral lobes, not connected behind the anther and more or less spirally involute. Anther scarcely acuminate, shorter than the column-lobes.—*Macdonaldia venosa*, Lindl. Swan Riv. App. 50, Gen. and Sp. Orch. 386; Reichb. f. Beitr. 9.

N. S. Wales. Port Jackson, *R. Brown, A. Cunningham, J. D. Hooker.*

16. **T. cyanea,** *Lindl. MS.* A smaller and more slender plant than *T. venosa*, of which it is by some considered as a variety. Leaves narrow-linear, channelled, not very long. Flowers 1 to 3, blue or white. Sepals and petals not above ½ in. long. Column-wings produced into erect lateral lobes as long as the anther, lanceolate or oblong, either laterally convolute or with one margin thickened, and more or less distinctly connected by a very short crest behind the anther. Anther acuminate and often 2-dentate.—*Macdonaldia cyanea*, Lindl. Swan Riv. App. 50; Gen. and Sp. Orch. 386; *Thelymitra venosa,*

Hook. f. Fl. Tasm. ii. 4, t. 102 A, as to the Tasmanian plant, not of R. Br.

Tasmania. Circular Head and Rocky Cape, *Gunn;* Cheshunt and Port Sorrell, *Archer;* Macquarrie Harbour, *Milligan;* Southport, *C. Stuart.*

Hooker reduces this to the Port Jackson *T. venosa*, but it appears to me sufficiently distinct in the smaller flowers, the acuminate anther, and differently shaped lateral lobes of the column.

29. EPIBLEMA, R. Br.

Sepals and petals all nearly equal and spreading. Labellum unguiculate, the claw with 2 erect thick lobes, the lamina ovate, concave, with a tuft of linear processes on the disk near the base. Column very short, with erect petal-like thin lateral lobes or appendages not connected behind the anther. Anther erect or slightly bent forward, the cells distinct, with a short recurved point. Pollen-masses granular. Rostellum short.—Terrestrial glabrous herb, with the habit of *Thelymitra.* Leaf narrow-linear. Flowers few in a terminal raceme.

The genus is limited to the single species endemic in Australia.

1. **E. grandiflorum,** *R. Br. Prod.* 315. Habit of the slender forms of *Thelymitra ixioides.* Stem erect, 1 to 1½ ft. high, with one long narrow linear leaf and 1 or 2 smaller erect leaves or sheathing scales. Flowers 2 to 5, pedicellate, in a short raceme, the bracts shorter than the ovary. Sepals and petals 7 to 8 lines long, broadly oblong-lanceolate, veined like those of *Thelymitra ixioides*, and all nearly similar, except that the dorsal one is more concave than the other, the lateral sepals shortly united under the labellum by a broad base, and the petals more ovate-lanceolate. Labellum as long as the sepals, the claw about 1½ lines long, the 2 appendages erect rounded and closely parallel, the processes of the disk of the labellum long, slightly clavate, ascending, or sometimes one or two of them deflexed and clasped by the appendages of the claw. Lateral appendages of the column broad, oblique, about 2 lines long.—Lindl. Gen. and Sp. Orch. 523; Endl. in Pl. Preiss. ii. 13; Reichb. f. Beitr. 10.

W. Australia. King George's Sound, *R. Brown, A. Cunningham, Baxter;* Swan river, *Drummond, 1st coll., Preiss, n.* 2219; Cape Le Grand, *Maxwell;* Lake Muir, *Muir.*

30. DIURIS, Sm.

Dorsal sepal erect, rather broad, closely embracing the column at the base, the upper part open; lateral sepals narrow-linear, almost herbaceous, parallel or sometimes crossed, spreading or deflexed; petals longer than the dorsal sepal, ovate-elliptical or oblong, on slender claws. Labellum usually as long as or rather longer than the dorsal sepal, deeply 3-lobed, the middle lobe much contracted at the base, with 1 or 2 longitudinal raised lines along the narrow part. Column very short, the wings produced into lateral erect lobes, but not continued behind the anther. Anther erect, often acuminate, the 2-valved

cells occupying nearly the whole inner surface. Rostellum 2-fid, shorter than the anther. Pollen-masses granular or mealy, without any distinct caudicle.—Terrestrial glabrous herbs, with underground tubers. Leaves narrow, few at or near the base of the stem, with a few sheathing bracts higher up. Flowers 1, 2 or several in a terminal raceme, often rather large and conspicuous from the antenna-like green lateral sepals, the rest of the perianth yellow purple or white, in many species bright yellow with deep purple spots or blotches, the prominent petals often very spreading, whilst the shorter dorsal sepal remains close over the column, make it appear as if the petals were outside in æstivation, and they are sometimes so drawn, but in the bud the æstivation is quite normal with the sepals outside.

The genus is limited to Australia, and cannot be confounded with any other, although the species are very difficult to distinguish from dried specimens which do not show their real colours.

Labellum 3-partite (the lateral lobes divided to the base), with 2 longitudinal raised lines on the middle lobe.
  Lateral sepals usually much longer than the petals.
    Flowers white . . . . . 1. *D. alba.*
    Flowers bluish purple . . . . . 2. *D. punctata.*
  Lateral sepals usually scarcely longer than the petals. Flowers yellow, often spotted or blotched with purple . . . . . 3. *D. aurea.*
Labellum 3-fid (the lateral lobes separating from above the base) with 2 longitudinal raised lines on the middle lobe.
  Raised longitudinal lines on the labellum at some distance apart. Eastern species.
    Lateral lobes of the labellum as long as or more than half as long as the middle lobe. Dorsal sepal usually as long as the labellum.
      Lateral sepals much longer than the petals . . . . . 4. *D. palustris.*
      Lateral sepals scarcely so long as the petals . . . . . 5. *D. maculata.*
    Lateral lobes of the labellum less than half as long as the middle lobe. Dorsal sepal usually shorter than the labellum.
      Raised longitudinal lines of the labellum pubescent . . 6. *D. pedunculata.*
      Raised longitudinal lines crenulate or cristate . . . . 7. *D. pallens.*
      Raised longitudinal lines glabrous and smooth . . . . 8. *D. abbreviata.*
  Raised longitudinal lines closely contiguous so as to appear like one canaliculate line, and uniting in a single one about the middle of the lamina. Western species.
    Leaves filiform Flowers 1 to 3 . . . . . 9. *D. setacea.*
    Leaves linear. Flowers several . . . . . 10. *D. emarginata.*
Labellum 3-partite (the lateral lobes divided off from the base) with a single raised longitudinal centre not furrowed.
  Labellum lateral lobes much shorter than the middle lobe.
    Flowers yellow often with purple spots . . . . . 11. *D. sulphurea.*
  Labellum lateral lobes nearly as long as the middle lobe.
    Flowers purple often mixed with buff-colour . . . . . 12. *D. longifolia.*
  Labellum lateral lobes much shorter than the middle lobe.
    Leaves filiform and habit of *D. setacea.* Flowers yellow . 13. *D. pauciflora.*

1. **D. alba,** *R. Br. Prod.* 316. A rather slender species, under or above 1 ft. high, exceedingly difficult in the dried state to distinguish from the small flowered specimens of *D. punctata.* Leaves usually narrower and one of them often nearly as long as the stem below the

inflorescence, but sometimes all shorter. Flowers white with a few dark spots inside, the proportions and shape of the parts the same as in *D. punctata* but all smaller. Lateral sepals 1 to 1¼ in. long; petals about ½ in.; dorsal sepal and labellum nearly equal in length and shorter than the petals. Lateral lobes of the column more frequently dentate than in *D. punctata*, but variable.—Lindl. Gen. and Sp. Orch. 509.; Reichb. f. Beitr. 13.

Queensland. Port Bowen and Shoalwater passage, *R. Brown;* Brisbane river, Moreton bay, *A. Cunningham;* Rockhampton and vicinity, *Bowman, Thozet, O'Shanesy;* Darling Downs, *Law;* Wide bay, *Bidwill;* Broad Sound, *Bowman;* Rockingham bay, *Dallachy.*

N. S. Wales. Port Macquarrie, *Backhouse;* Tweed river, *C. Moore;* New Zealand, *C. Stuart;* Clarence river, *Wilcox.*

A single specimen from Warwick in Herb. F. Mueller has very long filiform lateral sepals, and the rest of the flower very small, the colour not mentioned; others again from the northern districts of N. S. Wales have the petals longer and narrower, and the lateral sepals scarcely 1 in. long and rather broad. The lateral lobes of the labellum are very variable in their venation, sometimes broad at the apex and many-nerved, sometimes narrower with only 1 or 2 of the nerves conspicuous, and the 2 lateral lobes of the same labellum sometimes different in venation. So also with the lateral lobes of the column, one may in the bud overlap the labellum and the other be wholly inside, one with the nerve reaching almost to the apex, the other with it visible only halfway up.

2. **D. punctata,** *Sm. Exot. Bot.* i. 13, t. 8. Stems 1 to 2 ft. high, or even more. Leaves usually 2, linear, 3 to 6 in. long, with 2 empty sheathing bracts above them. Flowers 2 or 3, blue or purplish, often dotted but not blotched like several of the yellow species, the acuminate bracts often but not always exceeding the ovary. Dorsal sepal in the typical form broadly ovate-oblong, 7 to 8 lines long; lateral sepals deflexed, very narrow, nearly 2 in. long. Petals broadly elliptical-oblong, nearly 1 in. long including a claw of about 2 lines. Labellum about as long as the dorsal sepal, divided at the base into 3 lobes, the middle lobe obovate-oblong, the lateral ones about one-third as long, oblong-falcate, varying in breadth, entire or crenulate; disk of the middle lobe with 3 longitudinal raised lines or plates starting from the base; the 2 lateral ones ending somewhat abruptly and sometimes forming an acute tooth below the middle of the lobe, the central one not so prominent or obscure at the base, but continued further along the lamina. Lateral lobes of the column as long as the anther, lanceolate with undulate margins, more or less distinctly 1-nerved. Anther shortly acuminate, 2 lines long. Rostellum short, bifid. Wings of the column very shortly produced at the base in front, not meeting as in *Thelymitra*, but often continuous with the raised lines of the labellum. —*D. elongata*, Sw. in Schrad. Neu. Journ. i. 59; R. Br. Prod. 316; Lindl. Gen. and Sp. Orch. 509; Reichb. f. Beitr. 13; *D. lilacina*, F. Muell. in Linnæa, xxvi. 239.

N. S. Wales. Port Jackson, *R. Brown, Sieber, n.* 166, *and Fl. Mixt. n.* 627, and many others; Clarence river, *Wilcox;* Nangas, *M'Arthur;* Mudgee, *Woolls;* on the Murrumbidgee, *Nolan.*

Victoria. Port Phillip, *Gunn, F. Mueller;* Wendu Vale, *Robertson;* Yarra, Mount Alexander, Mount Abrupt, *F. Mueller;* East Gipps' Land, *Walter.*

Var. *minor*. Under 1 ft. high, with smaller flowers, the middle lobe of the labellum more rhomboidal.—New England, *C. Stuart;* Upper Clarence river, *Riley*.

Var. *longissima*. Lateral sepals at least 3 in. long.—Mudgee, *Taylor*.

I have been unable to ascertain for what reason Smith's name and figure have been ignored by all subsequent writers.

3. **D. aurea,** *Sm. Exot. Bot.* i. 15, t. 9. Stems 1 ft. high or more. Leaves narrow, not very long. Flowers 2 to 5, yellow or more or less blotched or tinged with brown. Petals obovate-oblong or elliptical, 6 to 8 lines long in the typical form including the claw; lateral sepals rather longer, more or less dilated above the middle; dorsal sepal shorter than the petals, broad and embracing the column at its base, the ovate upper portion more open. Labellum as long as the dorsal sepal, divided to the base, the middle lobe very broad, contracted at the base, the lateral lobes much shorter, broadly falcate, often undulate-toothed, the disk with 2 raised longitudinal plates ending usually in small teeth at or below the middle of the lamina. Lateral lobes of the column falcate, obtuse, sometimes irregularly toothed, the wings almost continuous at the base with the raised lines of the labellum.—R. Br. Prod. 315; Lindl Gen. and Sp. Orch. 509; F. Muell. Fragm. v. 172; Reichb. f. Beitr. 11; *D. spathulata*, Sw. in Schrad. Neu. Journ. i. 60; *D. oculata*, F. Muell. Fragm. v. 173, partly ?

Queensland. Gainsford, *Bowman?*

N. S. Wales. Port Jackson, *R. Brown, Woolls;* Port Stephens, *Lady Parry;* New England, *C. Stuart;* Clarence river, *Wilcox*.

Var. *obtusa*. Petals broadly ovate or obovate, very obtuse; dorsal sepal broad.—Hunter's river, *Herb. Lindley and Hooker;* Port Jackson, *Woolls*.

4. **D. palustris,** *Lindl. Gen. and Sp. Orch.* 507. Very near *D. maculata*, but usually a smaller plant with finer leaves, the stem rarely much above 6 in. high, bearing 1 to 4 flowers blotched with yellow and purple, but the dark colour prevailing. Lateral sepals longer and sometimes twice as long as the petals, usually 6 to 8 lines long; petals ovate or oblong tapering into the claw; dorsal sepal rather shorter than the petals, ovate, very obtuse. Labellum still shorter, 3-lobed at some distance from the base, the lateral lobes large, but not quite so long as the broad emarginate middle lobe; the longitudinal raised lines prominent between the lateral lobes, usually dying off gradually on the middle lobe near the base of its lamina.—Hook. f. Fl. Tasm. ii. 7.

Victoria. Wendu Vale, *Robertson;* Mount Alexander, *F. Mueller;* Burra-Burra, *Hinteracker;* Ararat, *Green*.

Tasmania. Marshy ground near Hobarton, Circular Head, &c., *Gunn*, and others.

S. Australia. Onkaparinga, *Whittaker;* Bugle Barossa and Lofty ranges, *F. Mueller;* York Peninsula, *Fowler*.

5. **D. maculata,** *Sm. Exot. Bot.* i. 57, t. 30. Rather a small slender species, usually under 1 ft. high. Leaves narrow. Flowers on long pedicels, yellow, much spotted or blotched with brown or purple and sometimes almost entirely dark-coloured except the yellow centre of the petals, under ½ in. long. Dorsal sepal erect rigid and embracing the column at the base, ovate-oblong and very open at the top; lateral

sepals at length recurved, narrow, rarely exceeding the petals; petals ovate, on a long rigid dark-coloured claw. Labellum shorter than the dorsal sepal 3-lobed from above the base, the lateral lobes large and usually as long or nearly as long as the broad middle lobe, the 2 raised lines of the disk ending usually in prominent angles or teeth a little above the base of the middle lobe. Lateral lobes of the column often toothed.—R. Br. Prod. 315; Bot. Mag. t. 3156; Lindl. Gen. and Sp. Orch. 507; Hook. f. Fl. Tasm. ii. 6, t. 104 B; Reichb. f. Beitr. 11; *D. pardina* and *D. curvifolia*, Lindl. Gen. and Sp. Orch. 507.

Queensland. Rockhampton, *Thozet.*
N. S. Wales. Port Jackson, *R. Brown, Sieber, n.* 165, and many others; New England, *C. Stuart;* southward to Twofold bay, *F. Mueller.*
Victoria. Wendu Vale, *Robertson;* Port Phillip, *Gunn;* Forest Creek, Scaler's Cove, *F. Mueller;* Grampians, *Fisher.*
Tasmania. Very abundant in pastures and loose forests throughout the colony, *J. D. Hooker.*
S. Australia. Bugle Barossa and Lofty ranges, *F. Mueller;* York Peninsula, *Fowler.*

Var. *concolor.* Flowers yellow, not at all or scarcely spotted.—*D. æqualis*, F. Muell. Herb.—Port Jackson, *Woolls, Fitzgerald;* Richlands, *M'Arthur.*—This form closely resembles the western *D. pauciflora*, except in the two raised lines of the labellum. It may possibly be Bauer's *D. pauciflora* from Port Jackson, cited by Reichb. f. Beitr. 13.

6. **D. pedunculata,** *R. Br. Prod.* 316. Stems 6 to 9 in. high. Leaves several at the base of the stem, usually about half its length, narrow-linear. Flowers 1 or 2, of a pale yellow, often with dark tinges at the base, from ½ to ¾ in. long. Petals elliptical, stipitate, about the same length as the linear lateral sepals; dorsal sepal shorter, broad, embracing the column at the base, shortly open at the top. Labellum longer than the dorsal sepal, 3-lobed at about 1 line above the base, the lateral lobes curved, not broad, often somewhat toothed, about ¼ the length of the ovate-rhomboid middle lobe; the 2 raised longitudinal lines far apart, ending in pubescent calli at the base of the broad part of the middle lobe, the intervening pubescent centre continued more or less along the middle of the lobe.—Lindl. Gen. and Sp. Orch. 508; Hook. f. Fl. Tasm. ii. 8, t. 105 A; F. Muell. Fragm. v. 173; Reichb. f. Beitr. 12; *D. lanceolata*, Lindl. l.c.; *D. Behrii*, Schlecht, Linnæa, xx. 572.

Queensland. Armidale, *Perrott.*
N. S. Wales. Port Jackson, *R. Brown, Woolls;* in the interior, *M'Arthur;* Macquarrie river and vale of Clwyd, *A. Cunningham.*
Victoria. Wendu Vale, *Robertson;* Portland, Melbourne, and many other localities, *F. Mueller,* and others, to E. Gipps' Land, *Walter;* Grampians, *Fisher.*
Tasmania. Abundant in moist places in many parts of the island, *J. D. Hooker,* and others.
S. Australia. Mount Gambier to St. Vincent's Gulf, *F. Mueller, Behr, and* others.

This species, with the flower usually pale coloured and narrow, and easily known by the pubescence of the centre of the labellum, varies much nevertheless in the breadth of the several parts of the flower, and in the raised lines or plates of the labellum, which sometimes end in broad pubescent calli separated by the broad base of the central pubescence of the lamina, sometimes are much rounded, incurved at the end, almost meeting, the pubescent centre of the lamina very narrow. The latter form characterizes

the *D. lanceolata*, Lindl.; but I have found many intermediates with slight differences in other characters variously combined.

7. **D. pallens,** *Benth.* A small plant, very nearly allied to *D. pedunculata*, but distinct as far as I am able to judge from dried specimens in several particulars. Flowers smaller, rarely ½ in. long, the lateral sepals scarcely herbaceous or quite as petal-like and about as long as the petals; the dorsal sepal much shorter. Labellum as long as the petals, 3-lobed from above the base as in *D. pedunculata*, but the lateral lobes still smaller in proportion than in that species, the raised lines or plates of the disk converging and ending in a single line along the lamina, but fringed with small calli instead of being pubescent or ciliate.

N. S. Wales. New England, *C. Stuart.*

8. **D. abbreviata,** *F. Muell. Herb.* Habit rather more of *D. maculata* than of *D. pedunculata*, to both of which this species is allied. Leaves rather narrow. Flowers pale-coloured when dry, more or less blotched, usually several in a loose raceme, the pedicels long and the rhachis often remarkably flexuose. Petals oval-oblong, on very long slender claws; lateral sepals rather longer, narrow-linear and herbaceous; dorsal sepal scarcely so long as the labellum, erect and embracing the column at the base, oval-oblong and open in the upper part. Labellum 3-lobed from above the base, the lateral lobes small, triangular or lanceolate, falcate; the middle lobe much longer, broad but much contracted at the base, the disk with 2 very prominent raised lines or plates ending a little beyond the base of the broad part of the middle lobe, quite smooth and glabrous. Lateral lobes of the column acute, entire or denticulate, the wings continuous in front with the raised lines of the labellum.

Queensland. Armidale, *Perrott;* Darling Downs, *Law;* also a specimen from Port Bowen, marked *D. dubia*, in Herb. R. Brown, appears to be this species.
N. S. Wales. New England, *C. Stuart.*

9. **D. setacea,** *R. Br. Prod.* 316. Stems under 1 ft. high. Leaves usually very narrow-linear or filiform and rather short. Flowers 1 to 3, yellow and most frequently with a few purple spots or blotches at least at the base of the labellum and sometimes as much spotted as in *D. maculata*, but occasionally wholly yellow and very variable in size, from under ½ in. to nearly ¾ in. long. Lateral sepals about as long as or rather longer than the elliptical petals; dorsal sepal and labellum about equal in length and from ⅔ to ¾ that of the petals. Labellum 3-lobed from very little above the base, the lateral lobes broad, about half as long as the middle one, the plate or longitudinal line along the centre much raised and deeply furrowed, forming on the claw of the middle lobe a double keel merging into a single one on the broad part of the lobe, the labellum being thus characterized as bicarinate by Brown and unicarinate by Lindley. Lateral lobes of the column narrow acute, as long as the anther.—Lindl. Gen. and Sp. Orch. 508; Reichb. f. Beitr. 12; *D. filifolia*, Lindl. Swan Riv. App. 51, t. 8 B; Gen. and Sp.

Orch. 510, Endl. in Pl. Preiss. ii. 11; *D. carinata*, Lindl. Gen. and Sp. Orch. 510; Endl. l.c.

W. Australia. King George's Sound and adjoining districts, *R. Brown*, and many others; and thence to Swan river, *Drummond*, 1*st coll. n.* 842, 843, 4*th coll. n.* 323, *Oldfield*, and others; eastward to Esperance bay, Cape Le Grand and Cape Arid, *Maxwell*.—I have not seen Preiss's specimens, but there is very little doubt of their having been rightly referred to this species, readily recognised by its foliage.

10. **D. emarginata,** *R. Br. Prod.* 316. Allied to *D. setacea*, but a stouter and taller plant, usually 1 to 2 ft. high. Leaves narrow-linear but not subulate, the empty sheathing bracts long and broad. Flowers several, distant from each other in a loose raceme, but on erect pedicels, larger than in *D. setacea*. Lateral sepals ¾ to 1 in. long; petals rather shorter, elliptical, contracted into a short claw; dorsal sepal shorter than the sepals, firm at the base and embracing the column, open at the top. Labellum as long as the dorsal sepal, the lateral lobes broad, entire or toothed, from ⅓ to ½ as long as the middle lobe, and the double raised plate or keel merging into a single one on the lamina of the middle lobe as in *D. setacea*.—Lindl. Gen. and Sp. Orch. 508; Reichb. f. Beitr. 12; *D. Drummondii*, Lindl. Swan Riv. App. 51, Gen. and Sp. Orch. 511.

W. Australia. King George's Sound, *R. Brown;* Lake Muir, *Muir;* Gordon, Tone, Kalgan, Vasse rivers, *Oldfield;* Swan river, *Drummond*, 1*st coll.*, and perhaps also Murchison river, *Oldfield*, the specimen very imperfect.

D. laxiflora, Lindl. Swan Riv. App. 51, Gen. and Sp. Orch. 510, from Swan river, *Drummond*, appears to me to be a rather slender drawn-up state of *D. emarginata*, but the specimens are not perfect enough for examination. I have not seen those of Preiss named *D. laxiflora* by Endl. in Pl. Preiss. ii. 11.

R. Brown evidently derived his name from an emargination of the petals and sepals, which he fully describes in his notes, but of which I can find no trace in the specimens of his herbarium labelled as *D. emarginata*, of the Prodromus. Probably the emargination was accidental in the specimen described on the spot; the dried specimens agree in every other respect with his description, as well as with Drummond's described by Lindley, although here as in *D. setacea* Lindley regarded the labellum as unicarinate, Brown as bicarinate.

11. **D. sulphurea,** *R. Br. Prod.* 316. Stature and habit very much those of *D. aurea*, from which this species is difficult to distinguish without examination of the flowers. Leaves usually rather broader than in that species. Flowers 2 to 5, yellow, almost always blotched with purple at least at the base of the petals. Dorsal sepal about ½ in. long, embracing the column at the base, narrow ovate and open upwards, lateral sepals longer but not very long, often reflexed, petals also longer than the dorsal sepal. Labellum 3-lobed from the base as in *D. aurea*, but shorter than the dorsal sepal; lateral lobes broad, several-nerved and more or less undulate-toothed; middle lobe at least twice as long, very broad but the sides closely reflexed, the disk with a single raised line along the centre gradually dying off above the middle of the lamina. Lateral lobes of the column acute, quite entire, as long as the anther; the wings joining at the base in the front of the column and continuous with the central keel of the labellum.—Lindl. Gen. and Sp. Orch. 509;

Hook. f. Fl. Tasm. ii. 7, t. 104 A; Reichb. f. Beitr. 12; *D. oculata*, F. Muell. in Linnæa, xxvi. 241.

N. S. Wales. Towards George's river, *R. Brown;* Port Jackson and Bathurst, *Woolls;* New England, *C. Stuart.*

Victoria. Glenelg river, *Robertson;* Port Phillip, *Gunn, F. Mueller;* Little river, *Fullager.*

Tasmania. Common in many parts of the colony, *J. D. Hooker*, and others.

S. Australia. Mount Gambier, *F. Mueller.*

The Victorian plant originally described by F. Mueller as *D. oculata*, is certainly the *D. sulphurea*, with the labellum shorter than the dorsal sepal, and with a single central ridge. The very similar *D. aurea* is, however, in several collections under the name of *D. oculata*, F. Muell., and is probably the one described under that name in the Fragmenta, v. 173, with the double keel or 2 longitudinal plates on the labellum.

12. **D. longifolia,** *R. Br. Prod.* 316. Stems from under 1 ft. to considerably above that height. Leaves linear, narrow or broad, one often but not always very long. Flowers usually 3 to 5, variable in size but usually large and dark-coloured when dry, described when fresh as purple and buff. Petals oval or oblong-elliptical often ¾ in. long including the claw; lateral sepals as long, linear or dilated above the middle; dorsal sepal much shorter and very broad. Labellum as long as the dorsal sepal, 3-lobed from the base; lateral lobes nearly as long as the middle one, very broadly cuneate and curved or obliquely obovate, entire; middle lobe contracted into a claw, with a faintly prominent raised line along the centre.—Lindl. Gen. and Sp. Orch. 509; Reichb. f. Beitr. 14; *D. porrifolia*, Lindl. Swan Riv. App. 51, Gen. and Sp. Orch. 511; Endl. in Pl. Preiss. ii. 12; *D. corymbosa*, Lindl. ll.cc.; Hook. f. Fl. Tasm. ii. 7, t. 105 B; F. Muell. Fragm. v. 172.

Victoria. Wendu Vale, *Robertson;* Queenscliff, *F. Mueller;* Portland, *Allitt;* Grampians, *Fisher;* E. Gipps' Land, *Walter.*

Tasmania. Port Dalrymple, *R. Brown;* common in the northern parts of the island, *J. D. Hooker*, and others.

S. Australia. Mount Gambier, and around St. Vincent's Gulf, *F. Mueller.*

W. Australia. King George's Sound, *Menzies, Harvey*, and others; thence to Vasse and Swan rivers, *Drummond*, 1*st coll. n.* 841; *Preiss, n.* 2195; and others; Murchison river, *Oldfield;* eastward to Bremer bay, *Maxwell.*

In some of the Western specimens (*D. corymbosa*), Lindl., the flowers are larger and the petals and labellum-lobes broader than in the Tasmanian and Victorian ones, in others quite as small or smaller.

13. **D. pauciflora,** *R. Br. Prod.* 316. A slender plant of 6 in. to 1 ft. resembling at first sight the var. *concolor* of *D. maculata*. Leaves very narrow, but not quite so fine as in *D. setacea*. Flowers 1 to 3, yellow or the petals and labellum with a purple base. Petals ovate, about ½ in. long, including the very short claws; lateral sepals not reflexed, linear but rather broader than in most species; dorsal sepal shorter. Labellum as long as or rather longer than the dorsal sepal, 3-lobed from the base, the lateral lobes not half as long as the middle lobe, with a single central raised line not reaching to half the length of the labellum.—Lindl. Gen. and Sp. Orch. 510; Reichb. f. Beitr. 13.

W. Australia. King George's Sound, *R. Brown*, who gathered several specimens,

but I have not seen it in any other collection. Bauer's Port Jackson plant of the same name, referred to by Reichb. f., l.c., is probably the yellow variety of *D. maculata*.

31. ORTHOCERAS, R. Br.

Dorsal sepal erect, incurved, hood-shaped; lateral sepals narrow-linear, long and erect; petals short, erect, narrow. Labellum 3-lobed, the middle lobe larger and contracted at the base, a thick callus on the disk between the lateral lobes. Column very short, with lateral erect lobes not connected behind the anther. Anther erect or slightly incurved, tapering to the end, the 2-valved cells occupying the whole inner face. Pollen-masses granular or mealy. Rostellum very short.—Terrestrial glabrous herb, with an ovoid tuber, few narrow leaves, and several sessile flowers.

The genus is limited to the single Australian species, found also in New Zealand.

1. **O. strictum,** *R. Br. Prod.* 317. Stem rigid, erect, 1 to 1½ ft. high. Leaves several near the base, linear, 3 to 6 in. long, or one or two outer ones short and lanceolate, and 2 or 3 long sheaths with short erect laminæ above the leaves. Flowers distant, erect, in an interrupted spike, the subtending bracts sheathing, acute, sometimes scarcely exceeding the ovary, sometimes much longer than the dorsal sepal. Dorsal sepal broad and very concave, much incurved, acute or obtuse, about ½ in. long, greenish or white outside, brown purple or yellowish inside; lateral sepals antenna-like, slightly clavate, ¾ to nearly 1 in. long; petals thin, not 2 lines long, truncate notched or toothed at the end. Labellum 3 to 4 lines long, the lateral lobes broad and oblique, the middle lobe twice as long and ovate, the callus between the lateral lobes broad and prominent, but variable in shape. Lateral lobes of the column often nearly as long as the petals.—Lindl. Gen. and Sp. Orch. 512; Reichb. f. Beitr. 14; *O. Solandri*, Lindl. l.c.; *Diuris Novæ-Zelandiæ*, A. Rich. Fl. Novæ Zel. 163, t. 25.

N. S. Wales. Port Jackson to the Blue Mountains, *R. Brown, A. and R. Cunningham, Woolls,* and others, but said to be very rare; towards Illawarra, *A. Cunningham.*

Victoria. Dandenong, *F. Mueller;* Glenelg valley, *Robertson.*

S. Australia. St. Vincent's Gulf, *F. Muell, Behr;* Spencer's Gulf, *Wilhelmi.*

The New Zealand plant does not appear to me to differ in the slightest particular.

32. CRYPTOSTYLIS, R. Br.

Flowers reversed. Sepals and petals nearly similar, narrow linear-lanceolate, thin and membranous, convolute and appearing subulate when the flower opens, the petals usually smaller than the sepals. Labellum longer and thicker than the sepals, undivided, sessile with a broad base enclosing the column, more or less contracted above the column, extended into a narrow or broad convex or concave lamina. Column exceedingly short, the wings forming broad distinct auricles or connected into a membrane behind the anther, the margin toothed or

jagged. Anther erect against the back of the stigma or bent forward over it, 2-celled, usually biconvex on the back, obtuse or shortly acuminate. Pollen-masses farinaceous.—Terrestrial glabrous herbs, with a short rhizome and thick fibres. Leaves few, radical, on rigid petioles, ovate to lanceolate. Flowering stems leafless, bearing 2 or more erect sheathing scales or empty bracts. Flowers rather large, green with a brown red or purple labellum, several in a terminal raceme. Bracts acute, membranous.

Besides the Australian species, which are all endemic, there are two or three in E. India and the Archipelago. The genus is nearly allied to *Calochilus*, differing in the rhizome and foliage, and in the labellum not fringed.

Labellum lamina convex with reflexed sides when fully out, the disk with a double raised line dilated into 2 prominent thick lobes near the end. Anther bent forward, with the column wings connected behind it.
- Leaves oblong or lanceolate. Eastern species . . . . . 1. *C. longifolia.*
- Leaves ovate or broadly oblong. Western species . . . . . 2. *C. ovata.*

Labellum lamina concave. Anther nearly erect, the column-wings or auricles not connected behind it.
- Labellum lamina very broad, with a broad membranous longitudinal vertical plate . . . . . 3. *C. erecta.*
- Labellum lamina linear, without any longitudinal plate or raised line . . . . . 4. *C. leptochila.*

1. **C. longifolia,** *R. Br. Prod.* 317. Leaves usually 2 or 3, on rather rigid petioles of 1 to 3 in. the lamina oblong or lanceolate, 2 to 4 in. long and erect. Scape 1 to 2 ft. high, bearing 2 or more distant sheathing scales of about ½ in. Flowers usually 3 to 6, rather distant, nearly sessile within membranous acute bracts, the ovary narrow, longer than the bract, much recurved at the end after flowering. Sepals and petals very thin and membranous, their lanceolate shape only seen in the bud for the margins are rolled inwards the moment the flowers expand; dorsal sepal usually about ¾ in. long, the lateral sepals rather longer, the petals shorter, but all otherwise similar and acute. Labellum usually about 1 in. long, scarcely contracted above the short broad base which completely encloses the column and has no internal raised lines, the lamina broadly oblong or ovate-oblong, the sides convolute in the bud but reflexed when the flower opens exposing two raised lines forming a double keel along the centre, which commences immediately above the broad base and expands a little below the end into 2 thick prominent rounded auricles or lobes, and tapers beyond them almost to the end of the lamina which is obtuse or shortly acuminate; there are also in the middle of the labellum 1 or 2 additional short raised lines parallel to the two principal ones, the disk veined but not so strongly as in *C. erecta.* Anther bent forward, almost hood-shaped, with a small dorsal recurved point near the apex. Column-wing broad short and irregularly lobed toothed or jagged, shortly continuous behind the anther.—Lindl. Gen. and Sp. Orch. 445; Bauer, Ill. Orch. Gen. t. 17, 18; Endl. Iconogr. t. 17; Hook. f. Fl. Tasm. ii. 9, t. 108 A; *Malaxis subulata,* Labill. Pl. Nov. Holl. ii. 62, t. 212; *Cryptostylis subulata,* Reichb. f. Beitr. 15.

Queensland. Glasshouse Mountains, *F. Mueller.*
N. S. Wales. Port Jackson, *R. Brown, Harvey, Woolls;* Hastings river, *Beckler;* Tweed river, *C. Moore;* M'Leay river, *Fitzgerald;* Pennant Hills, *A. Cunningham;* Ashfield, *Ramsay;* Maneroo, *Mrs. Calvert.*
Victoria. Portland, Dandenong, Bunip Creek, Snowy river, &c., *F. Mueller.*
Tasmania. Port Dalrymple, *R. Brown;* Circular Head, *Gunn;* Port Sorell, Garretts Sugarloaf, Meander river, *Archer;* Oyster Cove, *Milligan;* Southport, *C. Stuart;* N. Huon river, *Oldfield.*

Labillardière having placed the species in a genus with which it has no connexion, there seems to be no sufficient reason for substituting his specific name founded upon the apparent not upon the real shape of the sepals and petals, for the one so generally adopted.

2. **C. ovata,** *R. Br. Prod.* 317. Habit inflorescence and flowers of *C. longifolia*, from which this species is scarcely to be distinguished except by the larger broader leaves more strongly ribbed, resembling those of *Alisma plantago*, varying from ovate to oblong and 3 to 6 in. long. Labellum the same as in *C. longifolia*, or the raised central lines rather closer together, and the lobes near the end perhaps more prominent and narrower, not different however from those represented in the figure of *C. longifolia* in the Fl. Tasm.—Lindl. Gen. and Sp. Orch. 445; Reichb. f. Beitr. 15; Endl. in Pl. Preiss. ii. 11.

W. Australia. King George's Sound, *R. Brown;* Stirling Range, *Maxwell, F. Mueller;* towards Swan river, *Drummond, A. C. Gregory;* Hampden, *Clarke.*

3. **C. erecta,** *R. Br. Prod.* 317. Closely resembling *C. longifolia* in habit leaves, inflorescence and perianth, but usually rather smaller in stature, the ovary less recurved at the end and the labellum and column very different. Labellum much contracted immediately above the broad base enclosing the column, the lamina very broadly ovate and obtuse, deeply concave, membranous with a few dark veins very conspicuous in the dried state, and a vertically broad longitudinal membranous and veined plate along the centre occupying a great part of the length of the lamina. Column-wing expanded into 2 broad denticulate or jagged lateral lobes, not connected behind the anther, which is more erect than in *C. longifolia* and shortly rostrate.—Lindl. Gen. and Sp. Orch. 446; Reichb. f. Beitr. 15; F. Muell. Fragm. vii. 115.

N. S. Wales. Port Jackson to the Blue Mountains, *R. Brown, Caley, A. Cunningham, Woolls, Daintree, Miss Atkinson, Fitzgerald.*

4. **C. leptochila,** *F. Muell. Herb.* More slender than the other species, our specimens 6 in. to 1 ft. high, with smaller flowers in a rather dense raceme. Leaf ovate on a short petiole. Perianth of *C. longifolia* but shorter. Labellum with the short broad base of the other species, abruptly contracted above it into an oblong-linear rather thick channelled lamina of ½ in.; a thick longitudinal raised line or plate along the centre of the broad base (which is veined only in the other species) ceases at the contraction, and the lamina has only two rows or interrupted lines of scarcely prominent calli or dark thick spots (at least in the specimen examined). Column-wing with 2 broad denticulate lobes interrupted behind the nearly erect anther as in *C. erecta.*

N. S. Wales. Springwood, *R. Cunningham*, a single specimen; Kurrajong, *Mrs. Calvert*, two small specimens.

33. PRASOPHYLLUM, R. Br.

Flowers reversed. Dorsal sepal lanceolate or broad, concave, usually arched over the column and sometimes adnate to it at the base; lateral sepals as long or longer, lanceolate or linear, free or more or less united; petals usually shorter but sometimes as long as the sepals, lanceolate or linear. Labellum sessile or on a short claw or claw-like basal appendage to the column, ovate oblong or lanceolate, undivided, the margins undulate-crisped or entire, usually erect and concave at the base, recurved towards the end, the disk with an adnate plate sometimes broad with free margins, sometimes reduced to a central longitudinal thickening. Column very short, not winged, but with 2 lateral erect appendages, usually adnate on one side to the stigma. Anther 2-celled, erect behind the rostellum, which is often produced beyond it, but sometimes shorter than the anther. Pollen-masses granular, attached to a linear caudicle.—Terrestrial glabrous herbs with globular or ovoid underground tubers. Leaf solitary, usually with a long sheath, the lamina terete and sometimes long, shortly opened near the stem, or the whole leaf reduced to a small sheath with a short erect point. Flowers variously coloured, often pale or greenish yellow, several or numerous in a terminal spike, usually abruptly bent above the ovary so as to appear very spreading or reflexed.

Besides the Australian species there are three in New Zealand, one of them apparently identical with an Australian one. The habit of the genus and many of its characters are those of *Microtis*, from which it differs in the reversed flowers, the more developed lateral appendages to the column (sometimes described as staminodia), and by the elongated caudicle of the pollen-masses which in *Microtis* is very small or obsolete.

The lateral sepals in two or three instances have been described as 2-dentate. I have never found them so, and believe the error to have arisen either from a slip of the pen referring to lateral sepals instead of the lateral appendages of the column, or the writer to have meant the lip composed of the two combined lateral sepals.

Sect. 1. **Euprasophyllum.**—*Labellum sessile at the base of the column.*

Flowers mostly above 3 lines long. Ovary elongated, narrow.
- Tall plants. Lateral sepals connate at least in the middle.
  - Labellum with a broad gibbous thickish base, the inner plate broad, prominent, scarcely reaching beyond the bind. Leaf-lamina long . . . . . 1. *P. australe.*
  - Labellum with a rather narrow but obtuse base, the inner plate broad, but commencing only about the middle. Leaf-lamina very short and erect . . . . . 2. *P. flavum.*
  - Labellum slightly contracted at the base, the inner plate covering the greater part of the surface with its broad detached margins. Leaf-lamina long . . . . . 3. *P. elatum.*

Flowers mostly above 3 lines long. Ovary obovoid or oblong.
- Lateral sepals connate, at least in the middle.
  - Labellum abruptly bent down in the middle. Eastern species . . . . . 4. *P. brevilabre.*
  - Labellum gradually curved. Western species . . . 5. *P. hians.*

Lateral sepals free or very shortly connate at the base.
Labellum obtuse at the base or slightly contracted but not gibbous. Eastern species.
Labellum with the recurved end ovate or oblong, undulate, much broader than the thickened inner plate — 6. *P. patens.*
Labellum with the recurved end linear-lanceolate, not much broader than the thick inner plate . . . . — 7. *P. fuscum.*
Labellum with a gibbous base protruding between the lateral sepals. Western species . . . . . — 8. *P. cyphochilum.*
Flowers under 3 lines long. Ovary narrow-oblong. Slender Western species with numerous flowers.
Sepals and petals linear, all nearly equal . . . . . — 9. *P. ovale.*
Lateral sepals subulate, twice as long as the petals . . . — 10. *P. macrostachyum.*

Sect. 2. **Podochilus.**—*Labellum obtuse at the base, on a short distinct horizontal claw, but continuous with it and the base of the column.*

Lateral sepals not saccate at the base, usually connate.
Inner plate of the labellum deeply and copiously fringed on the margin. Tall Western species . . . . . — 11. *P. Fimbria.*
Inner plate of the labellum entire. Small Eastern species . — 12. *P. striatum.*
Lateral sepals saccate at the base. Western species.
Lateral sepals adnate at the base to the basal projection of the column, otherwise free . . . . . — 13. *P. parvifolium.*
Lateral sepals connate, the saccate base enclosing the basal projection of the column but free from it.
Flowers under 2½ lines. Sepals and petals of nearly uniform colour and mostly obtuse . . . . . — 14. *P. gibbosum.*
Flowers 3 lines long. Lateral sepals broad and white, contrasting with the deep-coloured acute dorsal sepal and petals . . . . . — 15. *P. cucullatum.*

Sect. 3. **Genoplesium.**—*Labellum obtuse or contracted into a claw at the base, articulate on a horizontal claw-like basal projection of the column, and usually moveable. Stem slender, the leaf almost or quite reduced to a sheathing bract. Flowers very small.*

Labellum neither fringed nor ciliate.
Lateral sepals broad, very gibbous at the base. Labellum broad. Rostellum as long as the anther . . . . . — 16. *P. nigricans.*
Lateral sepals narrow, scarcely gibbous. Labellum narrow.
Column shorter than the anther. Rostellum very short.
Flower dark coloured, about 1 line long . . . . . — 17. *P. rufum.*
Column as long as or longer than the anthers. Rostellum half as long as the anthers.
Lateral appendages of the column 2-fid or 2-dentate.
Flowers pale, nearly 2 lines long . . . . . — 18. *P. brachystachyum.*
Lateral appendages of the column entire and long.
Flowers dark-coloured, 1½ lines long . . . . . — 19. *P. despectans.*
Labellum ciliate or fringed.
Labellum oblong, fringed in the upper half with long hairs.
Lateral sepals gibbous at the base.
Lateral sepals 2 to 2½ lines. Labellum equal or dilated towards the end . . . . . — 20. *P. fimbriatum.*
Lateral sepals nearly 3 lines. Labellum tapering towards the end . . . . . — 21. *P. Archeri.*
Labellum broadly ovate, fringed or ciliate with long hairs.
Lateral sepals not gibbous at the base . . . . . — 22. *P. intricatum.*
Labellum ovate-oblong, bordered with very short cilia. Lateral sepals scarcely gibbous at the base . . . . . — 23. *P. Woollsii.*

Sect. 1. Euprasophyllum.—Labellum sessile at the base of the column.

1. **P. australe,** *R. Br. Prod.* 318. Stems often 2 to 3 ft. high, the leaf-sheath occupying about half its length or even more, the lamina much shorter than the spike. Flowers "striped with brown and yellowish green" in a spike of 3 to 6 in. or rather more. Ovary elongated. Sepals and petals all acutely acuminate, about 4 lines long, the dorsal sepal broad and concave, the lateral sepals united in the middle, sometimes free at the base and the points always free; petals broader than in *P. elatum.* Labellum sessile, with a broad gibbous somewhat fleshy erect base, abruptly recurved and reflexed in the middle of its length, the margins of the recurved part undulate, the inner plate very prominent, entire or minutely crenulate, scarcely reaching beyond the bend. Anther obtuse, shorter than the rostellum. Lateral appendages of the column adnate to the stigma at the base, lanceolate-falcate, obtuse, rather longer than the rostellum, dilated and sometimes thickened on the outer margin.—Reichb. f. Beitr. 17; *P. lutescens,* Lindl. Gen. and Sp. Orch. 514; Hook. f. Fl. Tasm. ii. 10, t. 110 B.

Victoria. Wet places or in water, Portland, *Robertson, Allitt.*
Tasmania. Adventure bay, *Nelson* (*Herb. R. Brown*); Rocky Cape, *Gunn;* Flinders island and Oyster Cove, *Milligan;* Southport, *C. Stuart.*

2. **P. flavum,** *R. Br. Prod.* 318. Stems stout, attaining 2 to 3 ft. the whole plant drying very dark. Leaf-sheath rather loose, the lamina rarely 1 in. long, erect, concave with a very short terete point. Bracts rather broad. Flower of a yellowish green. Ovary elongated. Sepals lanceolate, acute, nearly 4 lines long, the lateral ones connate the greater part of their length; petals narrower, but nearly as long. Labellum ovate-oblong, sessile, almost gibbous concave and erect at the base, recurved towards the end, broader in the middle; the inner plate commencing from about the middle, the oblique margins joining in the centre and dying away before the end of the lamina. Lateral appendages of the column adnate on one side at the base, short and broad, of a thicker texture than those of most species, 2-dentate or 2-lobed at the end.—Lindl. Gen. and Sp. Orch. 514; Hook. f. Fl. Tasm. ii. 11, t. 109 A; Reichb. f. Beitr. 17.

N. S. Wales. Port Jackson, *R. Brown;* Blue Mountains, *R. Cunningham;* Berrima, *Miss Calvert;* towards Durval, *Leichhardt;* New England, *C. Stuart.*
Tasmania. Cheshunt, *Archer;* Oyster Cove, *Milligan;* Huon river, *Oldfield;* Southport, *C. Stuart.*

3. **P. elatum,** *R. Br. Prod.* 318. Stems from under 2 ft. to above 3 ft. high, the long leaf-sheath covering a great part of it, the lamina often long but very variable. Flowers greenish, nearly sessile in a raceme or spike of 4 to 8 in. or even longer. Ovary elongated. Dorsal sepal and petals lanceolate, very acute, 4 to 5 lines long, lateral sepals often rather longer, connate at least from the middle upwards, the points sometimes also free. Labellum about as long as the petals, sessile but not gibbous at the base, ovate-oblong, the margins undulate, the inner

plate occupying the greater part of the surface, its free margins broad, converging and united a little below the apex. Lateral appendages of the very short column free, linear-falcate, obtuse, as long as the anther, the outer margin thickened near the base into an oblong gland-like prominence. Anther nearly 2 lines long, the acuminate rostellum about as long.—Lindl. Gen. and Sp. Orch. 515; Reichb. f. Beitr. 16; *P. australe*, Lindl. l.c. 514; Hook. f. Fl. Tasm. ii. 10, not of R. Br.

N. S. Wales. Port Jackson, *R. Brown*, *Sieber*, *n.* 167, *Woolls*, and others.
Victoria. Port Phillip, *F. Mueller*; E. Gipps' Land, *F. Mueller*, *Walter*.
Tasmania. Circular Head and Rocky Cape, in poor soil, *Gunn*.
S. Australia. Lofty Range and Guichen bay, *F. Mueller*.
W. Australia. King George's Sound, *R. Brown*, *F. Mueller*, and others; Swan river, *Drummond*, 1*st coll.*

These Western species vary much in the size and depth of colour of the flowers and in the precise shape of the labellum, which is sometimes very broad, sometimes much narrowed towards the end. They would include *P. giganteum* and *P. macrotys*, Lindl. Swan Riv. App. 54, Gen. and Sp. Orch. 515; *P. Brownii*, Reichb. f. Beitr. 16; *P. Drummondii*, Reichb. f. l.c. 58 and 60, and probably the *P. macrotys*, Endl. in Pl. Preiss. ii. 12, which I have not seen. The long almost transparent lateral appendages of the column with a thickened or glandular margin on the outer base, and the broad plate of the labellum are constant in all the forms.

4. **P. brevilabre,** *Hook. f. Fl. Tasm.* ii. 11, t. 110 A. Allied to *P. patens* in aspect, in the size of the flowers and in the ovary, but with the perianth more like that of *P. elatum*. Stems mostly under 1 ft. high, the leaf-sheath broad and loose, the lamina usually but not always rather short. Ovary obovoid or oblong, narrower than in *P. patens*, but much shorter than in *P. elatum*. Dorsal sepal under 4 lines long; petals rather shorter narrow and acuminate; lateral sepals longer and broader than the dorsal one, united almost to the end. Labellum sessile, the erect part rather narrow, the oblong lamina of the length of the erect part, but abruptly reflexed against it so as to give a very short appearance to the whole labellum; the margins much undulate; the inner plate commencing from the base, nearly as broad as the erect part, and continued very shortly on to the reflexed lamina. Lateral appendages of the column adnate to the stigma rather high up, entire, the outer margin without any appendage.

Queensland. Archer's station, Moreton bay, *Leichhardt*.
N. S. Wales. Hastings river, *Beckler*.
Victoria. Moe swamps, *F. Mueller*; E. Gipps' Land, *Walter*.
Tasmania. Rocky Cape, *Gunn*; Southport, *C. Stuart*.

5. **P. hians,** *Reichb. f. Beitr.* 59, 61. Stem 6 in. to 1 ft. high, the leaf-sheath loose. Flowers "whitish" or "of a reddish green" rather larger than in *P. patens*, in a rather dense spike. Sepals about 4 lines long, the lateral ones united almost to the apex, very thin and whitish near their line of junction; petals at least as long as the sepals and more dilated than in most other species. Labellum sessile, rather broad at the base but not gibbous, recurved above the middle, the margins undulate, the inner plate much narrower forming a longitudinal central thickening, ending at the bend or a little beyond it

in a thick papillose-fringed callus. Column rather long, the lateral appendages adnate on one side, falcate, acute, entire. Anther short.

W. Australia. King George's Sound, *F. Mueller*; Harvey river, *Oldfield*; also in *Drummond's collection*, but our specimens too much injured for positive identification.

6. **P. patens,** *R. Br. Prod.* 318. Stems usually tall but varying from 1 to 3 ft., the length of the leaf also very variable. Flowers usually smaller than in *P. elatum*, larger than in *P. fuscum*, of a yellowish green, the labellum bordered with white, but neither the size nor the shade of colour constant. Ovary obovoid or shortly oblong. Sepals lanceolate, acute or obtuse, scarcely 4 lines long, the lateral ones quite free, the petals of the same length but more obtuse and much more petal-like in consistence. Labellum as long as the petals, sessile but not gibbous at the base, the erect part not very broad, as long as the recurved or reflexed portion, which varies from ovate to oblong, or almost lanceolate, but always shows a considerable breadth of undulate margin, the inner plate not very prominent, much narrower than the labellum and scarcely extending beyond the bend or rarely reaching nearly to the end. Lateral appendages of the column adnate at the base on one side to the stigma, nearly as long as the rostellum, the outer margin without the glandular prominence of *P. elatum*, and rarely with a scarcely prominent tooth. Anther rather shorter than the rostellum.—Lindl. Gen and Sp. Orch. 513; Hook. f. Fl. Tasm. ii. 11, t. 111; Reichb. f. Beitr. 19.

Queensland. Armidale, *Perrott.*

N. S. Wales. Port Jackson, *R. Brown, Woolls*, and others; in the interior, Nangas, *M'Arthur*; Mudgee, *Taylor*; New England, *C. Stuart*; southward to Twofold bay and Murray river, *F. Mueller.*

Victoria. Wendu Vale, *Robertson*; mouth of the Glenelg, *Allitt*; Port Phillip, *Gunn*; Melbourne, Cobras mountains, Wimmera, *F. Mueller.*

Tasmania. Abundant in moist ground throughout the island, *J. D. Hooker* and others.

S. Australia. From Mount Gambier to St. Vincent's Gulf, *F. Mueller* and many others.

P. truncatum, Lindl. Gen. and Sp. Orch. 513, Hook. f. Fl. Tasm. ii. 12, t. 109, distinguished by the slightly prominent lateral tooth of the column appendages and by the inner plate of the labellum terminating abruptly a little beyond the bend and not dying off on the lamina, does not appear to me to be separable even as a marked variety, for differences in these respects may be observed almost from specimen to specimen.

7. **P. fuscum,** *R. Br. Prod.* 318. A very variable species nearly allied to some forms of *P. patens*, usually rather smaller with smaller flowers, and the sepals and petals narrow and darker coloured, but the extreme forms of the two species only to be distinguished by the labellum. Spike short or long, dense or interrupted. Ovary obovoid or shortly oblong as in *P. patens*. Flowers usually drying black or very dark, rarely pale-coloured. Dorsal sepal lanceolate, concave, acuminate, about 3 lines long in the typical form, but varying from 2½ to 4 lines; lateral sepals nearly as long, narrow, free or very shortly connate at the base; petals rather shorter and linear. Labellum nearly as long as the sepals, narrower than in *P. patens*, the erect part very concave, but neither gibbous at the base nor clawed, the spreading end very

narrow lanceolate; the inner plate not distinct at the base, showing slightly raised margins towards the end of the erect part and thence continued to near the end of the lamina in a thick often papillose centre, leaving a very narrow plain margin or occupying the whole breadth; the breadth however of the erect part and its contraction abrupt or gradual into the narrow lamina very variable. Lateral appendages of the column obliquely ovate-oblong, entire or irregularly 2-dentate, the outer margin often dilated at the base. Anther usually as long as the rostellum, obtuse or shortly and obtusely acuminate.—Lindl. Gen. and Sp. Orch. 516; Hook. f. Fl. Tasm. ii. 12, t. 112; Reichb. f. Beitr. 18; *P. alpinum*, R. Br. Prod. 318, Lindl. l.c. 515; Hook. f. l.c. ii. 12, t. 112; Reichb. f. Beitr. 19; *P. affine* and *P. rostratum*, Lindl. l.c. 516.

Queensland. Archer's station, Moreton bay, *Leichhardt.*

N. S. Wales. Port Jackson, *R. Brown;* Bathurst, *Woolls;* Emu plains, *A. Cunningham;* New England, *C. Stuart.*

Victoria. Portland, *Robertson;* Station Peak, Grampians, Munyong mountains, Gipps' Land, *F. Mueller;* Murray river, *Dallachy.*

Tasmania. Table mountain (Mount Wellington), *R. Brown;* Rocky Cape and Hampshire hills, *Milligan.*

S. Australia. Pine Forest, *Behr;* from various localities on St. Vincent's Gulf, *F. Mueller.*

Var. *grandiflorum*, flowers 4 to 5 lines long, but with the narrow petals and sepals and peculiar labellum end of *P. fuscum*.—Mudgee, *Woolls*; Pine Forest, *Behr.*

Botanists are generally agreed in distinguishing two species, but not as to the characters assigned to them, derived for the most part from the examination of specimens few in number or from few localities. With several hundred specimens before me from various stations I have been unable to sort them into marked varieties, although I would not deny that their study in a living state may point out more constant distinctions which have escaped me. Brown had only a rather large-flowered Port Jackson plant as *P. fuscum* and a small-flowered alpine Tasmanian plant as *P. alpinum*, without any of the very numerous intermediates. He describes the lateral sepals of *P. fuscum* as cohering at the base, those of *P. alpinum* as free; Archer (in Hook. f. l. c. ii. 13) reverses these characters. I have found them almost constantly free, though closely overlapping each other at the base, rarely shortly connate, and never connate in the middle as in *P. brevilabre*. Gunn and Hooker find that this partial connexion affords no constant character. Gunn observes that *P. alpinum* has a strong smell of Hyacinths, and *P. fuscum* is inodorous. But the Mediterranean *Orchis coriophora*, for instance, has three varieties, a sweet-smelling, a nauseous-smelling, and an inodorous one, which in the fresh state I was unable otherwise to distinguish. The colour of the flower of a dusky brown-green in *P. fuscum*, of a light green in *P. alpinum*, appears also to be very inconstant.

8. **P. cyphochilum,** *Benth.* Stems 1 to 2 ft. high. Leaf-lamina slender, sometimes short as in *P. brevifolium*, sometimes elongated. Flowers small, pedicellate, "white or pale-yellow." Ovary oblong-turbinate. Sepals about 2 lines long, the lateral ones quite free; petals rather shorter. Labellum sessile, gibbous at the base, forming a short pouch usually protruding between the lateral sepals, the erect part very concave, not broad, tapering upwards, the recurved portion about half its length and much undulate; the inner plate reduced to parallel not much raised lines along the centre. Lateral appendages of the column almost free, linear-falcate, quite entire, scarcely above half as long as the rather long rostellum. Anther shorter than the rostellum, shortly and obtusely acuminate.

W. Australia. Darling range, *Collie;* Swan river, *Oldfield;* King George's Sound and adjoining districts, *Oldfield, F. Mueller, Muir.*

9. **P. ovale,** *Lindl. Swan Riv. App.* 54, *Gen. and Sp. Orch.* 516. Stems rather slender, above 1 ft. high, the leaf-sheath and lamina long. Flowers small, in a spike of 3 to 6 in. not dense. Ovary narrow. Sepals about 2½ lines or sometimes nearly 3 lines long in the typical form, narrow, the lateral ones gibbous and very shortly united at the base, otherwise free, the petals scarcely shorter. Labellum sessile, the erect portion about 2 lines long, concave, of nearly equal breadth or slightly contracted at the base, the reflexed portion about half as long, rounded, undulate; inner plate much narrower than the labellum, ending at the bend in a thick papillose almost fringed callus. Lateral appendages to the column falcate, entire, as long as the rostellum. Anther shorter.

W. Australia. Swan river, *Drummond, 1st coll.*

Var. *triglochin,* Reichb. f. Beitr. 60. Leaf-lamina short. Flowers scarcely 2 lines long, the lateral sepals quite free from the base, the inner plate of the labellum ending less abruptly.—W. Australia, *Drummond.*

10. **P. macrostachyum,** *R. Br. Prod.* 318. A slender plant usually not so tall as *P. ovale,* but sometimes much resembling it or even taller, the flowers smaller, quite green, shortly pedicellate and usually rather distant in a long spike. Ovary narrow-turbinate or oblong. Lateral sepals about 2 lines long, lanceolate-subulate, acute, broad and shortly united at the base (or sometimes quite free?); dorsal sepal as long or rather shorter; petals considerably shorter, lanceolate, acute. Labellum sessile, shorter than the sepals and narrower than in *P. ovale,* the erect part concave, the reflexed part as long, ovate, almost acuminate; the inner plate nearly as broad as the erect part, forming 2 calli at the bend and shortly continued along the centre of the reflexed part.—Reichb. f. Beitr. 17; *P. gracile,* Lindl. Swan Riv. App. 54, Gen. and Sp. Orch. 516; Endl. in Pl. Preiss. ii. 13; *P. nigricans,* Endl. in Pl. Preiss. ii. 12, not of R. Br. (*Reichb. f.*)

W. Australia. King George's Sound, *R. Brown, F. Mueller;* Swan river, *Drummond, 1st coll.*; Gordon river, *Oldfield.*

Sect. 2. Podochilus.—Labellum obtuse at the base, on a short distinct horizontal claw, but continuous with it and with the base of the column.

11. **P. Fimbria,** *Reichb. f. Beitr.* 60. A tall species with the habit and size of flowers of *P. elatum,* but with a very different labellum. Ovary elongated. Flowers "pale violet, fragrant." Sepals about 5 lines long, the lateral ones free at the base but often connate above the middle; petals not nearly so long, linear. Labellum as long as the sepals, truncate at the base, on a distinct narrow horizontal claw of about ½ line, the lamina broadly oblong, slightly contracted at the bend in the middle, the upper part broad with fringed or crisped margins, the inner plate broad, commencing with 2 broad callosities at the base and ending above the middle in a broad free densely fringed margin, and within it in the centre of the labellum a more or less conspicuous

second plate with scarcely prominent entire margins. Lateral appendages of the column falcate, as long as the rostellum, with a small tooth on the outer margin.—*P. giganteum*, Endl. in Pl. Preiss. ii. 12, not of Lindl.

W. Australia. King George's Sound, *F. Mueller;* Kalgan river, *Harvey;* Swan river, *Drummond;* Gordon, Harvey, Swan, and Murchison rivers, *Oldfield;* Swan river, *Preiss, n.* 2215.

12. **P. striatum,** *R. Br. Prod.* 318. Stems scarcely exceeding 6 in., the leaf-sheath rather long, the lamina subulate. Flowers about the size of those of *P. patens,* in a raceme of 1 to 2 in. Ovary oblong-cylindrical. Lateral sepals united to near the end, narrow, acuminate, about 3 lines long; dorsal sepal rather shorter, narrow, concave; petals nearly as long as the sepals, lanceolate. Labellum fully 2 lines long, inserted on a narrow horizontal claw but continuous with it, oval-oblong, concave, the lower half erect, the upper half recurved, with undulate margins; the inner plate broad in the lower half, reduced upwards to a thick double raised line reaching almost to the end. Lateral appendages of the column narrow-linear, almost as long as the long slender-pointed rostellum. Anther very short, not acuminate; caudicle long and filiform.—Lindl. Gen. and Sp. Orch. 514; Reichb. f. Beitr. 18.

N. S. Wales. Port Jackson to the Blue Mountains, *R. Brown, A. Cunningham, F. Mueller,* and others.

13. **P. parvifolium,** *Lindl. Swan Riv. App.* 54, *Gen. and Sp. Orch.* 517. Stems slender, 9 in. to above 1 ft. long, the leaf above the middle of the stem, with a short slender lamina. Flowers resembling those of *P. striatum,* in a loose raceme of 2 to 3 in. Ovary narrow-oblong. Sepals about 3½ lines long, the lateral ones dilated at the base and adnate to the basal projection of the column, forming a short pouch, but otherwise free, the dorsal one lanceolate, concave; petals narrower and rather shorter. Labellum stipitate at the end of the basal projection, but apparently continuous with it, the total length of the projection and claw nearly 2 lines, the lamina lanceolate, concave, recurved, as long as the sepals; the inner plate nearly as broad as the lamina, and ending about the middle of its length. Lateral appendages of the column 1½ lines long, entire. Rostellum as long as the lateral appendages. Anther short. Caudicle of the pollen-masses long and linear.—Endl. in Pl. Preiss. ii. 13.

W. Australia. Swan river, *Drummond, 1st coll., Preiss. n.* 2220; Cape Leuwin, *Collie.*

14. **P. gibbosum,** *R. Br. Prod.* 318. Stems from under 6 in. to near 1 ft. long, the leaf-sheath long, with a narrow linear lamina. Spike rather dense. Lateral sepals united into a lip of about 2 lines, obtuse, very concave, projected at the base into a sack or short and very obtuse spur; dorsal sepal as long, obtuse, nearly similar in texture to the lateral ones; petals nearly as long, oblong-linear, tapering into a claw. Labellum nearly as long as the sepals, linear-oblong or linear-

cuneate, on a short horizontal claw, then erect to the middle, the upper part recurved, slightly undulate, truncate at the end; the inner plate not very conspicuous, not much narrower than the labellum at the lower end, and gradually disappearing long before the upper end. Lateral appendages of the column broadly falcate, obtuse, not half as long as the petals but longer than the rostellum and anthers, entire or with a small tooth on the outer margin.—Lindl. Gen. and Sp. Orch. 517; Reichb. f. Beitr. 18.

W. Australia. King George's Sound, *R. Brown*, also in *Drummond's collections*, *n.* 506.

15. **P. cucullatum,** *Reichb. f. Beitr.* 59. Very near *P. gibbosum* and probably a variety only. Apparently a smaller plant with a dense spike of 1 to 1½ in. Flowers about 3 lines long, similar in structure to those of *P. gibbosum*, but the broader white lateral sepals with their saccate base contrasting with the darker coloured narrow-lanceolate acuminate dorsal sepal; petals acute, almost as long as the dorsal sepal. Labellum like that of *P. gibbosum*, but the lamina ending in a much broader dilatation, and the inner plate or thickened centre scarcely prominent, ending before the dilatation. Lateral appendages of the column falcate, obtuse, about 1 line long. Rostellum with a long point. Anther short. Caudicle very long.—*P. gibbosum*, Endl. in Pl. Preiss. ii. 13.

W. Australia, *Drummond, n.* 443; *Preiss, n.* 2211; Gardner river, *Maxwell.*

I have great doubts whether this be really distinct from *P. gibbosum*, some of Brown's specimens look very much like it.

Sect. 3. Genoplesium.—Labellum obtuse or contracted into a claw at the base, articulate on a horizontal claw-like basal projection of the column. Stem slender, the leaf almost or quite reduced to a sheathing bract. Flowers very small.

The species of this section have all very nearly the same habit, and are very closely allied to each other. They are distinguished by small differences in the shape and proportion of the parts of the flowers, some of which may prove to characterize varieties rather than species, or even to be individual, although mostly verified on several specimens. The study of living specimens may therefore cause considerable modification in their circumscription.

16. **P. nigricans,** *R. Br. Prod.* 319. Stem very slender, under 6 in. high, with a single leaf or rather leafy sheathing bract very near the spike, ½ to ¾ in. long, the very short point or lamina erect. Flowers very small, in a spike of ½ to 1 in., usually dense, and drying of a dark purple or almost black. Ovary ovoid-globular, very oblique at the top. Sepals broader than in the following species, with minute points usually tipped with a small gland, the dorsal sepal about 1 line long, broadly hood-shaped, the lateral ones broadly lanceolate, 1½ to 1¾ lines long, often greener than the rest of the flower, their broad base either united under or adhering to the basal projection of the column forming a basal gibbosity but otherwise free; petals about 2 lines long, triangular-lanceolate, acute. Labellum articulate at the end of the claw-like basal projection of the column and said to be moveable, ovate or ovate-oblong, about 1 line long, almost acute, slightly contracted at the base; the

inner plate thick, occupying about $\frac{2}{3}$ of the breadth and extending to the end. Lateral appendages of the column almost as long as the petals, acutely bifid at the end. Rostellum rather long. Anther shorter, with a very short fine inflexed point difficult to see and sometimes wanting.—Lindl. Gen. and Sp. Orch. 513; Reichb. f. Beitr. 19.

N. S. Wales. Port Jackson, *Woolls.*
Tasmania. Oyster Cove, *Milligan;* Southport, *C. Stuart.*
S. Australia. Port Lincoln, *R. Brown.*

17. **P. rufum,** *R. Br. Prod.* 319. Stem slender, 6 to 8 in. high, the leaf reduced to a sheathing bract near the spike $\frac{1}{2}$ to $\frac{3}{4}$ in. long, the lamina short erect and subulate. Flowers the smallest in the genus, in a spike of $\frac{1}{2}$ to $\frac{3}{4}$ in. Ovary oblong. Sepals tipped with a small point but (always?) without the gland of *P. nigricans*, the dorsal sepal ovate, concave, $\frac{2}{3}$ line long, the lateral ones lanceolate, quite free, 1 line long; petals lanceolate, the length of the dorsal sepal. Labellum articulate on a linear erect claw or claw-like projection of the column, said to be moveable, narrow-lanceolate or rarely broader, recurved, not ciliate; the inner plate with raised margins occupying the greater part of its breadth. Column very short below the anther, the lateral appendages about $\frac{1}{4}$ line long, 2-dentate or 2-fid. Anther mucronate, rather long. Stigma much shorter, with a minute rostellum.—Lindl. Gen. and Sp. Orch. 513; Reichb. f. Beitr. 20; *P. nudum*, Hook. f. Fl. N. Zel. i. 242, Fl. Tasm. ii. 14, t. 113 (partly).

Queensland. Rockingham bay, *Dallachy.*
N. S. Wales. Port Jackson, *R. Brown.*
Victoria. Wilson's Promontory and Western Port (with the lateral appendages of the column almost entire), *F. Mueller;* Station Peak, *Fullagar.*
Tasmania. Cheshunt, *Archer.*

Var.? *intermedium*, with a broader labellum, but the small narrow sepals and petals seem to be rather those of *P. rufum* than of *P. nigricans.*—Port Jackson, *Woolls, Daintree.*

The species is also in New Zealand. *Genoplesium Baueri*, R. Br. Prod. 319, Reichb. f. Beitr. 21, of which no specimen appears to have been preserved, is founded on Bauer's drawing representing either an abnormal specimen or one in which there had been some confusion between the petals and lateral lobes of the column. It is evidently a *Prasophyllum*, and appears to me rather to belong to this species than to the following one, to which Hooker referred it. The plate of *P. nudum*, Hook. f., above quoted, represents the species correctly as to the general figure, but the analysis unfortunately must have been taken from a flower of the *P. intricatum.*

18. **P. brachystachyum,** *Lindl. Gen. and Sp. Orch.* 513. Nearly allied to *P. nigricans*, with the same habit, but readily known by its much narrower lighter coloured flowers, which are again distinguished from those of *P. rufum* chiefly by their size. Spikes usually short and dense. Lateral sepals nearly 2 lines long, shortly acuminate, but without the distinct gland of *P. nigricans*, scarcely dilated or slightly gibbous at the base; dorsal sepal shorter and broader, but not nearly so broad as in *P. nigricans.* Labellum articulate on a short basal projection of the column, lanceolate, neither ciliate nor fringed; the inner plate forming thick raised lines within the margin. Column about as

long below the anther as the anther, the lateral appendages of the column unequally 2-lobed, the inner lobe usually acuminate, the other short and broad. Rostellum shorter than the anther, but ovate and much more prominent than in *P. rufum.*—Hook. f. Fl. Tasm. ii. 13.

Tasmania. Circular Head, Rocky Cape, Hampshire hills, &c., *Gunn.*

P. nudiscapum, Hook, f. l.c., from Hobarton, seems to me to belong to this species rather than to *P. rufum*, although in some measure intermediate between the two; the flowers are however too far advanced to determine accurately the proportions of their parts.

19. **P. despectans,** *Hook. f. Fl. Tasm.* ii. 13, t. 113 A. Stems slender, leafless except a sheathing bract of about ½ in. below the spike. Flowers narrow and dark coloured as in *P. rufum*, but longer, the spike dense, ½ to 1 in. long. Lateral sepals lanceolate, acuminate, 1½ lines long, free and oblique at the base but not gibbous; dorsal sepal shorter, very concave, acuminate; petals broadly lanceolate, half as long as the lateral sepals. Labellum much shorter than the sepals, articulate on a short incurved basal projection of the column, moveable, lanceolate, recurved, channelled above. Column as long below the anther as the anther, the lateral appendages falcate, acuminate, longer than the anther, entire or with a small tooth halfway down. Rostellum shorter than the anther.

Tasmania. Sandy soil near Hobarton, *J. D. Hooker;* Cheshunt, *Archer;* Southport, *C. Stuart.*

20. **P. fimbriatum,** *R. Br. Prod.* 319. Stems very slender, about 6 to 8 in. high, with an erect leafy bract above the middle. Flowers small, drying dark, in a spike of ½ to 1 in. Ovary oblong-cylindrical. Lateral sepals nearly 2 lines long, with a very short claw and dorsal gibbosity or dilatation at the base, linear-falcate; dorsal sepal rather shorter, lanceolate, acute, concave, slightly ciliate; petals shorter, acuminate, striate. Labellum articulate at the end of a basal projection of the column of about ¼ line, linear-oblong, contracted into a short erect claw, recurved in the upper part, slightly dilated at the end and densely fringed with long fine cilia; the inner plate forming 2 raised thick lines extending along the claw and narrow part of the base of the dilatation. Lateral appendages of the column nearly as long as the anther, acutely bifid, the column below the anther very short. Anther with a fine point.—Lindl. Gen. and Sp. Orch. 517; Reichb. f. Beitr. 20.

N. S. Wales. Port Jackson, *R. Brown, A. Cunningham, Woolls.*

21. **P. Archeri,** *Hook. f. Fl. Tasm.* ii. 14, t. 113 B. Rather taller than *P. fimbriatum*, the leaf reduced to a sheathing bract with a short erect almost subulate lamina close under the inflorescence. Flowers rather larger than in the other species of the section, few together in a spike rarely 1 in. long. Ovary oblong, recurved. Lateral sepals nearly 3 lines long, of the shape and with the basal dilatation of those of *P. fimbriatum;* dorsal sepals and petals shorter, ciliate. Labellum articulate at the end of the basal projection of the column, oblong-linear and fringed with long hairs as in *P. fimbriatum*, but more tapering

towards the end. Column fully ½ line long below the anther, the lateral appendages longer than the anther, bifid, the outer lobe coloured like the petals, the inner lobe thin white and rather shorter. Rostellum shorter than the anther.

Tasmania. Cheshunt, *Archer;* Oyster Cove, *Milligan.*

22. **P. intricatum,** *C. Stuart in Herb. F. Muell.* A slender plant, with the habit and leafy bract of *P. fimbriatum.* Flowers brown or pale yellow, with the labellum purple. Lateral sepals rather more than 2 lines long, lanceolate, acute, neither oblique nor dilated at the base; dorsal sepal shorter and broader, concave, very acute; petals rather shorter and acute. Labellum articulate on the short basal projection of the column, broadly obovate, convex, recurved, fringed with shorter cilia than in *P. fimbriatum.* Lateral appendages of the column unequally bifid, the outer lobe ciliate. Rostellum shorter than the anther.

Tasmania. Southport, *C. Stuart.*—The analytical details given as those of *P. nudum* (*P. rufum*, Br.) in Hook. f. Fl. Tasm. ii. t. 113, appear to me to have been drawn from a flower of the present *P. intricatum*, but I have not met with any specimen from which it can have been taken.

23. **P. Woollsii,** *F. Muell. Fragm.* v. 100. Stem almost filiform, above 6 in. long, the leafy bract small and distant from the inflorescence. Spike ¾ in. long. Lateral sepals deeply coloured, lanceolate-subulate, slightly gibbous at the base, 1½ to 1¾ lines long; dorsal sepal paler coloured, lanceolate, acuminate and rather shorter; petals about half as long as the dorsal sepal, acutely acuminate, minutely ciliate. Labellum articulate on the short basal projection of the column, ovate-oblong, shorter than the sepals, obtuse, bordered with very short cilia. Column very short, the lateral appendages bifid, as long as the anther. Rostellum short.

N. S. Wales. Blue Mountains, *Miss Atkinson*, a single specimen in Herb. F. Mueller.

34. MICROTIS, R. Br.

Dorsal sepal erect, broad, incurved, concave; lateral sepals as long or shorter, lanceolate or oblong, spreading or recurved; petals usually narrower, incurved or spreading. Labellum sessile, oblong, obtuse truncate emarginate or 2-lobed, usually callous at the base and somewhat thickened along the centre. Column very short, nearly terete, with 2 small wings or auricles behind the stigma. Anther erect, 2-celled, the connective not produced; pollen-masses granular, without any or with a minute caudicle. Stigma obtuse or with a rostrum shorter than the anther.—Terrestrial glabrous herbs, with small globular underground tubers. Leaf solitary, the lamina elongated and terete, shortly opened out near the stem and continued in a closed sheath down the stem. Flowers small, green or whitish, usually numerous in a terminal spike, and owing to a bend immediately above the ovary the perianth is often horizontal or reflexed.

The genus extends to New Zealand, and in a single species to New Caledonia, the Indian Archipelago, and S. China. Of the six Australian species, one is common in New Zealand, another is the same as the Archipelago one, the remaining four are endemic. The habit of the genus is that of the small-flowered *Prasophyllæ*, the peculiar foliage is the same; it differs chiefly in the small rostellum and lateral appendages of the column, and the want of any long caudicle to the pollen-masses.

Dorsal sepal broad and very concave; lateral sepals recurved.
Labellum entire or emarginate.
Flowers above 1 line long. Labellum with a tubercle or callus on the disk near the end, the margin usually crisped . . . . 1. *M. porrifolia.*
Flowers scarcely 1 line. Labellum entire, without any callus on the disk except at the base. Eastern species . . . . . 2. *M. parviflora.*
Flowers about 1¼ lines. Dorsal sepal not so broad as in the foregoing. Labellum entire. Western species . . . . . 3. *M. media.*
Lateral sepals revolute. Dorsal sepal acuminate, contracted at the base. Labellum broadly 2-lobed, crenate or fringed . . . . 4. *M. alba.*
Lateral sepals spreading, but not recurved.
Dorsal sepal very broad and obtuse. Labellum entire, broad, almost quadrate, not callous. Flowers about ½ line long . . 5. *M. atrata.*
Dorsal sepal not much broader than the lateral ones. Labellum contracted in the middle. Flowers about 1 line long . . . . 6. *M. pulchella.*

1. **M. porrifolia,** *Spreng. Syst.* iii. 713. Usually tall and stout, often above 1 ft. high, with a long leaf and a dense spike of small green flowers, but sometimes slender with the flowers distant in a long spike. Pedicels short, subtended by small bracts. Dorsal sepal erect, broadly ovate, shortly acuminate, very concave, about 1⅓ lines long; lateral sepals spreading and recurved, about 1 line long; petals shorter, erect or spreading. Labellum sessile, as long as the lateral sepals, oblong, very obtuse retuse or shortly 2-lobed, the margin crisped or crenate, the disk with 2 oblong adnate calli or short longitudinal plates at the base, and above them the centre thickened and terminating in a tubercle or raised callus below the apex. Column very short, the auricles usually less prominent than in *M. parviflora*.—Lindl. Gen. and Sp. Orch. 395; *M. Banksii*, A. Cunn. in Bot. Mag. under n. 3377; *M. unifolia*, Reichb. f. Beitr. 62; *M. rara*, R. Br. Prod. 321; Hook. f. Fl. Tasm. ii. 24; Reichb. f. Beitr. 22; *M. pulchella*, Lindl. Gen. and Sp. Orch. 395, Hook. f. Fl. Tasm. ii. 24, t. 118, not of Br.; *M. arenaria*, Lindl. l.c. 396, Hook. f. l.c.; *M. frutetorum*, Schlecht. Linnæa, xx. 568.

Queensland. Burnett river, *F. Mueller;* Moreton bay, *C. Stuart.*
N. S. Wales. Port Jackson to the Blue Mountains, *R. Brown, A. Cunningham, Woolls,* and others; New England, *C. Stuart.*
Victoria. From Portland, *Allitt,* and Wendu Vale, *Robertson,* to Gipps' Land, *F. Mueller,* and in many other collections from various parts of the Colony.
Tasmania. Abundant throughout the island, *J. D. Hooker,* and others.
S. Australia. From the Murray to St. Vincent's Gulf, *F. Mueller, Behr,* and others.

The species is also in New Zealand, and appears to be the commonest form in South-Eastern Australia, not extending to the tropics. F. Mueller proposes to unite it with the two following ones under the name of *M. viridis.*

2. **M. parviflora,** *R. Br. Prod.* 321. A more slender species than *M. porrifolia*, the leaf and especially the sheath much narrower, the flowers smaller and less crowded in the majority of specimens although

sometimes this character is reversed, as in those described by Brown, both species having varieties or races with crowded and with attenuated inflorescences. Dorsal sepal broad, obtuse, concave, scarcely above 1 line long; lateral sepals shorter, and petals still smaller. Labellum as long as the lateral sepals, oblong, obtuse, entire, the transverse callus at the base not very prominent, the disk not thickened excepting near the apex where it usually forms a papillose protuberance rather than a callus. Column with distinct auricles between the stigma and the anther.—Lindl. Gen. and Sp. Orch. 395; Endl. Iconogr. t. 15; Bot. Mag. t. 2377; Hook. f. Fl. Tasm. ii. 25; Reichb. f. Beitr. 22.

Queensland. Port Bowen, *R. Brown;* Burnett river, *F. Mueller;* Rockhampton and neighbourhood, *Bowman, O'Shanesy;* Moreton bay, *C. Stuart.*

N. S. Wales. Port Jackson to the Blue Mountains, *R. Brown*, and many others; Macleay river, *Fitzgerald;* New England, *C. Stuart;* also in *Leichhardt's collection.*

Victoria. Gipps' Land, *F. Mueller.*

Tasmania. Circular Head, *Gunn.*

Var. *densiflora.* Flowers very numerous in a dense spike of about 2 in., the dorsal sepal very broad; perhaps a distinct species.

W. Australia. *Drummond, 4th or 5th coll. n.* 117, and perhaps the same from King George's Sound, *Maclean.*

The species extend to New Caledonia, the Indian Archipelago, and South China; it is the only tropical representative of the genus. F. Mueller unites it with the *M. porrifolia* as his *M. viridis;* and Woolls, who has supplied the Muellerian collection with very numerous specimens of both species, also suggests that they may not be really distinct. They appear, however, at any rate to be well-marked varieties. The minute differences in the form and the calli or papillose protuberances of the labellum may very often be individual only, and those above described in the two species must not be relied upon as constant.

M. Benthamiana, Reichb. f. Beitr. 24, from Sydney, *R. Brown*, does not appear to me to be distinct from *M. parviflora.*

3. **M. media,** *R. Br. Prod.* 321. A tall species, with the habit and the rather narrow leaves of the larger specimens of *M. parviflora*, but the flowers are considerably larger, much recurved. Dorsal sepal acute, not very broad and somewhat contracted at the base, coming nearer in shape to that of *M. alba*, about 1¼ lines long; lateral sepals short and revolute; petals still shorter. Labellum usually narrow, truncate or retuse, the margins entire or slightly crenulate. Column with prominent auricles.—Lindl. Gen. and Sp. Orch. 396; Bot. Mag. t. 3378; Reichb. f. Beitr. 23; *M. Brownii*, Reichb. f. Beitr. 24.

W. Australia. King George's Sound, *R. Brown;* Gordon and Blackwood rivers, *Oldfield;* Swan river, *Drummond, 1st coll.;* Murchison river, *Oldfield.*

This, the Western representative of the two preceding species, appears to have been included by Lindley in his *M. rara*, and forms part of F. Mueller's above-mentioned *M. viridis.*

4. **M. alba,** *R. Br. Prod.* 321. Stem usually tall, often above 1 ft. high. Leaf with a long sheath and the lamina often exceeding the spike. Flowers numerous, much incurved, nearly white when dry, said to be whitish green or cream-coloured by some collectors, in a spike sometimes very dense especially when young, sometimes long slender and interrupted. Dorsal sepal very prominent, lanceolate-

falcate, acute, concave but less hood-shaped than in *M. porrifolia*, and contracted at the base, 1½ to 2 lines long or in some specimens rather longer; lateral sepals nearly as long, oblong, at first erect or spreading but becoming revolute as the flower fades; petals shorter and narrower. Labellum as long as the sepals, narrow at the base, the upper half expanded into 2 lobes either large and broad or long narrow and divaricate, the margins always undulate and crisped crenate or fringed, the disk with an oblong callosity along the centre of the broad parts, and sometimes a pair of marginal calli below it. Column with very prominent narrow auricles.—Lindl. Gen. and Sp. Orch. 396; Reichb. f. Beitr. 23.

W. Australia. King George's Sound and adjoining districts, *R. Brown, Oldfield, F. Mueller*, and others; eastward to Esperance bay and Cape Le Grand, *Maxwell;* Swan river, *Drummond*, 1*st coll.*

Some specimens from various collectors have smaller flowers, with a narrower labellum and shorter capsules than the others, but I have been unable to sort them into distinct varieties; the larger-flowered ones have the capsules sometimes long sometimes short; the labellum is exceedingly variable as to the breadth and as to the shape of its lobes.

5. **M. atrata,** *Lindl. Swan Riv. App.* 54, *Gen. and Sp. Orch.* 395. The smallest of all the species, usually only 3 to 4 in. high and rarely exceeding 6 in., of a bright green when fresh, but usually drying black, especially the flowers. Leaf usually short, but the long sheath reaching almost to the inflorescence. Flowers minute, in a rather dense spike of ½ to 1½ in. Dorsal sepal concave, very obtuse, about ½ line long and broad; lateral sepals and petals nearly equal to it in length, oblong, very obtuse, spreading but not revolute. Labellum as long as the upper sepal, broadly oblong and very obtuse or almost square, convex, quite entire, without calli but marked by two longitudinal striæ.—Endl. in Pl. Preiss. ii. 6; *M. minutiflora*, F. Muell. Fragm. i. 90.

Victoria. Portland, *Allitt;* near Melbourne, *Adamson;* Grampians, *F. Mueller.*
W. Australia. King George's Sound, *R. Brown;* near Perongerup and Mount Clarence, *F. Mueller;* Swan river, *Drummond*, 1*st coll. n.* 852, *Preiss, n.* 2403.

6. **M. pulchella,** *R. Br. Prod.* 321. Stem slender, under 1 ft. high. Leaf narrow and short. Spike not dense, rarely 2 in. long, the bracts very small and the pedicels very short, the flowers drying of a yellowish tinge and the proportion of the parts different from those of any other species. Dorsal sepal about 1 line long, ovate, obtuse, slightly concave but much less so than in the other species; lateral sepals as long and almost as broad and not reflexed; petals also as long, but much narrower and incurved over the column. Labellum at least as long, oblong, truncate or retuse, slightly contracted in the middle, the margin entire, the disk thickened at the base into a broad callus, and bearing a small oblong thickening towards the end. Capsule ovoid.—Reichb. f. Beitr. 23.

W. Australia. King George's Sound, *R. Brown*, also *Drummond, n.* 307.
Lindley does not appear to have examined this very distinct species, of which there

is no specimen in his herbarium, but only a tracing of Bauer's drawing of it; the Eastern specimens he mistook for it appear to me to be referrible *M. porrifolia*.

35. CORYSANTHES, R. Br.

Dorsal sepal erect, very much incurved and concave, hood-shaped or contracted into a stipes; lateral sepals and petals small, linear, sometimes minute. Labellum erect under the galea, broadly tubular, the margin of the oblique orifice either shortly recurved and denticulate, or produced into a large concave denticulate or fringed lamina closely reflexed. Column short, erect, variously thickened under the stigma or winged. Anther erect, 2-celled, the outer valves large, the inner small; pollen-masses granular, without any caudicle.—Dwarf terrestrial herbs, with small underground tubers, and a single ovate-cordate orbicular or reniform leaf, with a scarious sheathing bract below it. Flower solitary, sessile within the leaf or very shortly pedicellate, with a small subtending bract usually close to the leaf.

The genus is also in New Zealand and the Indian Archipelago. The Australian species are all endemic. I cannot agree with Reichenbach f. in reviving Salisbury's name of *Corybas* on the ground of priority of general publication. It has been universally rejected as having been surreptitiously described and figured, and falsely characterized from the inspection of a drawing of Bauer's with Brown's name attached to it, as was well known at the time, and was published on authority which could not be and was not denied. In the following descriptions I have been obliged to take from Bauer's finished drawings some details which it was impossible to verify from dried specimens.

Dorsal sepal with a narrow linear claw as long as the orbicular lamina. Labellum without basal spur, the tube broad, the lamina very short . . . . . 1. *C. unguiculata.*

Dorsal sepal gradually contracted towards the base. Labellum slightly 2-gibbous at the base, the lamina large, reflexed, concave, denticulate, or fringed . . . . . 2. *C. fimbriata.*

Dorsal sepal with a broad base. Labellum 2-spurred at the base, broad and very oblique upwards, with a slightly recurved convex margin . . . . . 3. *C. bicalcarata.*

1. **C. unguiculata,** *R. Br. Prod.* 328. Leaf rather more ovate than in the two following species. Ovary rather long. Dorsal sepal abruptly contracted into a linear claw of 2½ to 3 lines erect at the base and then much incurved, the lamina nearly orbicular, concave, about 3 lines diameter; lateral sepals and petals narrow-linear, sometimes nearly as long as the dorsal one but variable. Labellum rather longer, the tube ovoid, oblong, incurved, somewhat inflated not unlike that of the corolla of some species of *Digitalis*, the orifice very shortly and obliquely expanded into a denticulate lamina, with a longitudinal hairy broad line inside. Column very short, 2-winged, the wings with a lower oblong reflexed lobe, as in several species of *Pterostylis*.—Endl. Iconogr. t. 18; *Corybas unguiculatus*, Reichb. f. Beitr. 43.

N. S. Wales. Port Jackson, *R. Brown, A. Cunningham.*

I have only seen three specimens of this species, all very small, one in Herb. R. Brown in the same sheet as one of *C. bicalcarata* (referred by Reichenbach f. by mistake to *C. pruinosa*, Cunn.), the two others in Herb. A. Cunningham, also mixed with

the very distinct *C. bicalcarata*, a specimen of which was unfortunately sent to Lindley under the name of *C. unguiculata*, and represents it in his Herb. where the true plant is wanting.

2. **C. fimbriata,** *R. Br. Prod.* 328, *and App. Flind. Voy.* 610, t. 10. A small plant, usually drying black, rarely 2 in. high including the flower. Leaf orbicular-cordate, about 1 in. diameter, usually thicker and more opaque than in *C. bicalcarata*, the midrib and reticulate veins alone distinguishable or the latter sometimes united in a circular vein within the margin, the leaf rarely thinner with the veins more conspicuous. Flower or even the whole plant said to be of a violet purple, or by others as of a deep red, sessile or nearly so above the leaf with a small bract, the ovary short. Dorsal sepal ¾ to 1 in. long, varying from very much incurved to much straighter, probably at different periods of inflorescence, much contracted in the lower half, but not abruptly unguiculate as in *C. unguiculata;* lateral sepals and petals linear, small, but longer than in *C. bicalcarata*. Labellum-tube much narrower than in the other two species, erect against the dorsal sepal, 4 to 5 lines long, with 2 minute obtuse spurs or gibbosities at the base sometimes scarcely conspicuous, the lamina reflexed, very large, varying however longer or shorter than the tube, concave with inflexed fringed margins, the disk reticulate and hairy inside along the centre. Column very short, much thickened under the stigma, but not winged.—Lindl. Gen. and Sp. Orch. 393; Hook. f. Fl. Tasm. ii. 16, t. 117; *Corybas pruinosus* and *C. fimbriatus*, Reichb. f. Beitr. 42, 43.

N. S. Wales. Port Jackson, *R. Brown, A. Cunningham,* and many others.

A. Cunningham, as quoted by Lindley, Gen. and Sp. Orch. 393, distinguished two species, *C. fimbriata*, with a much incurved obtuse galea, and *C. pruinosa*, with a more erect mucronate galea. In the dried specimens those with an erect galea are quite as obtuse as the others, and in that state it is impossible to distinguish two distinct forms. The specimens of *Corysanthes* were all much mixed in Herb. A. Cunningham, two or even three species laid down on the same sheet, and none named by him *C. pruinosa.*

Var. *diemenica.* Labellum lamina rather shorter and denticulate only, not bordered by long cilia or fringe, but the teeth very variable. *C. diemenica*, Lindl. Gen. and Sp. Orch. 393.

Victoria. Port Phillip and Sealer's Cove, *F. Mueller;* Wendu Vale, *Robertson.*
Tasmania. Common in various parts of the island, *J. D. Hooker.*
S. Australia. St. Vincent's Gulf, *F. Mueller.*
W. Australia. Perongerup, *Mrs. Knight.*

It is possible that I may have included two or three species under *C. fimbriata*, but they cannot be separated in the dried state.

3. **C. bicalcarata,** *R. Br. Prod.* 328. Usually rather larger than the two preceding species, the stem often above 1 in. below the leaf, the leaf orbicular-cordate, larger and thinner than in *C. fimbriata*, and often almost transparent when dry showing besides the midrib 1 or 2 circular veins on each side connected by the transverse reticulations, but occasionally leaves of the two species scarcely distinguishable. Ovary long, cylindrical. Dorsal sepal very much incurved, very obtuse, not contracted at the base; lateral sepals and petals very small, linear-subulate, sometimes minute or almost obsolete. Labellum-tube broad in the upper part, incurved and concealed under the dorsal sepal, taper-

ing at the base with 2 short narrow-conical spurs, readily visible in the dried specimens, between which are the minute lateral sepals; the orifice oblique, with a recurved convex margin or lamina. Column much thicker and shorter than in *C. unguiculata*, the wings narrow, and a prominent gibbosity at the base between the column and labellum.—Lindl. Gen. and Sp. Orch. 394; *Corybas aconitiflorus*, Salisb. Parad. Lond. t. 83 incorrect as to details; Reichb. f. Beitr. 43.

Queensland. Brisbane river, Moreton bay, *W. Hill;* Rockhampton, *Thozet.*
N. S. Wales. Port Jackson, *R. Brown, A. Cunningham;* Paramatta and Currajong, *Woolls.*

Salisbury's above quoted plate contains rude copies of Bauer's three figures of the whole plant, with analytical details incorrectly borrowed. Whether Salisbury's story of the withered specimen from Lady Essex's garden, and the dried specimens of the two other species be a fiction or not cannot now be positively ascertained; but if they existed, they could never have been examined for his character and description. He was far too shrewd an observer to have overlooked the tubular nature of the labellum, and to have so grossly misdescribed other essential characters which he had misunderstood from a hasty inspection without study of Bauer's original drawings, as he had mistaken the colouring which was there only indicated by figures.

36. PTEROSTYLIS, R. Br.

Dorsal sepal broad, erect, incurved and very concave; petals lanceolate falcate, contracted at the base and attached to the basal projection of the column, falcate and curved under the dorsal sepal, nearly as long and forming with it an arched or almost hood-shaped upper lip or galea; lateral sepals more or less united in an erect or recurved 2-lobed lower lip, adnate at the base to the basal projection of the column, the lobes often terminating in long points. Labellum on a short claw at the end of the basal projection of the column, moveable, the lamina linear or oblong, channelled flat or convex, produced below its insertion on the claw into an appendage either very short and obtuse or longer linear incurved and forked or penicillate at the end with a tuft of three or more setæ or cilia. Column elongated within the galea and curved with it, with a pair of hatchet-shaped or quadrangular wings one on each side of the rostellum and sometimes narrowly winged lower down, the base produced into a short horizontal projection. Stigma oblong on the face of the column about the middle of its length below the wings. Anther erect, the cells distinct, 2-valved. Pollen-masses granular.—Terrestrial herbs, with small underground tubers. Radical leaves ovate, in a tuft at the base of the flowering stem or in a separate tuft or at a different time of year, the stem-leaves either developed and linear or lanceolate, or reduced to scarious sheathing scales. Flowers usually green often tinged or streaked with red or brown, large and solitary, or smaller and several in a raceme on short pedicels. The bend of the petals partaking always of that of the dorsal sepal, it has been thought useless to describe them separately for each species, they are comprised with the dorsal sepal under the name of galea.

The genus is chiefly Australian; one of the Australian species extends into New

Caledonia, another into New Zealand, where are also five or six species not Australian, the remainder of the genus is strictly endemic in Australia.

Sect. 1. **Antennæa.**—*Lower lip erect, the lobes or their points embracing the galea.*

Series 1. **Grandifloræ.**—*Flowers large (usually above ¾ in. and never under ½ in.) solitary (or abnormally and very rarely 2). Labellum-appendage linear, penicillate or with 2 or 3 bristle-like lobes at the end (the cilia very rarely and abnormally deficient).*

Radical leaves rosulate at the base of the flowering-stems. No stem-leaves except sheathing scales.
- Labellum bifid at the end.
  - Labellum-lobes narrow. Flowers above 1 in. long . . . 1. *P. ophioglossa.*
  - Labellum-lobes short and broad. Flowers under 1 in. long 2. *P. concinna.*
- Labellum entire at the end.
  - Flowers 1 in. long or more. Lobes of the lower lip lanceolate with an acute sinus between them.
    - Flowers erect, curved only at or above the middle.
      - Labellum very obtuse. Galea slightly curved, the point oblique . . . . . 3. *P. curta.*
      - Labellum acuminate. Galea much curved at the middle. The point horizontal . . . . . 4. *P. acuminata.*
    - Flowers much curved below the middle so as to appear nodding, the point reflexed . . . . . 5. *P. nutans.*
  - Flowers ½ to ¾ in.
    - Lobes of the lower lip lanceolate, with an acute sinus between them . . . . . 6. *P. pedunculata.*
    - Lobes of the lower lip separated by a broad truncate sinus with an inflexed tooth . . . . . 7. *P. nana.*

Leaves crowded at the base of the flowering-stem, passing gradually into stem-leaves or scales.
- Flowers (of *P. nana*) ½ to ¾ in. Lobes of the lower lip truncate, separated by a broad sinus, with an inflexed lobe or tooth . . . . . 8. *P. pyramidalis.*
- Flowers 1 in. or more. Lobes of the lower lip lanceolate, separated by an acute sinus.
  - Flowers glandular-papillose . . . . . 9. *P. cucullata.*
  - Flowers quite glabrous outside . . . . . 10. *P. furcata.*

Lower leaves reduced to scarious scales which pass into linear or lanceolate scales or leaves, the largest either subtending the pedicel or next to it.
- Points of the sepals straight.
  - Labellum ending in a filiform point clavate at the end.
    - Lower lip truncate between the lobes . . . . . 11. *P. grandiflora.*
  - Labellum tapering above the middle, acute or with a slender point. Lower lip notched or with an acute sinus between the lobes.
    - Leaves usually lanceolate. Flower above 1 in. long . 12. *P. reflexa.*
    - Leaves very narrow. Flower under 1 in. long . . . 13. *P. præcox.*
  - Labellum very obtuse. Flower under 1 in. long. Lower lip truncate between the lobes . . . . . 14. *P. obtusa.*
- Points of the galea and of the lower-lip lobes recurved in opposite directions. Flower large . . . . . 15. *P. recurva.*

Series 2. **Parviflorae.**—*Flowers 2 or more very rarely only 1. Labellum-appendage short entire or with 2 or 3 setæ. Stems leafless at the time of flowering, except empty sheathing bracts.*

Sepals with fine points. Labellum shortly 2-lobed at the base, with a small appendage between the lobes . . . . . 16. *P. Daintreana.*

Sepals acute or very shortly pointed. Labellum-appendage short and narrow, with 2 or 3 setæ . . . . . 17. *P. parviflora.*
Sepals obtuse. Labellum-appendage very short obtuse and entire . . . . . 18. *P. aphylla.*

Sect. 2. **Catochilus.**—*Lower lip reflexed from the base or recurved from the middle, the lobes short or narrow. Labellum-appendage entire and obtuse, sometimes almost obsolete.*

Flower large, solitary. Labellum linear-terete or filiform, bearded with long hairs, glabrous at the end.
Leaves broadly lanceolate, crowded at the base of the stem, diminishing upwards . . . . . 19. *P. barbata.*
Leaves short, linear, acuminate, nearly equally distributed along the stem . . . . . 20. *P. turfosa.*
Flowers several, under ½ in. long.
Leaves in a radical rosette, persistent or fading away before flowering, those of the stem reduced to scarious sheaths.
Sepals all obtuse, the lower lip shortly 2-lobed . . . . 21. *P. mutica.*
Sepals with short or rarely long fine points, the lower lip deeply 2-lobed . . . . . 22. *P. rufa.*
Stems leafy without a radical rosette.
Leaves linear or linear-lanceolate. Column-wings nearly square. Eastern species . . . . . 23. *P. longifolia.*
Leaves lanceolate. Column-wings with an oblong lower lobe. Western species . . . . . 24. *P. vittata.*

Sect. 1. Antennæa.—Lower lip of the flower erect, concave, the lobes closing over the galea and embracing it by their points, which often extend far beyond it.

Series 1. Grandifloræ.—Flowers large and solitary at the end of the scape or stem, or very rarely 2 (only 2 biflorous specimens seen out of many hundreds). Labellum produced at the base into a linear appendage, curved up at the end and there terminating in 2 or 3 bristle-like lobes or in a tuft of cilia (penicillate).

1. **P. ophioglossa,** *R. Br. Prod.* 326. Leaves in a radical rosette, shortly petiolate, ovate or broadly oblong, obtuse or mucronulate, ¾ to 1½ in. long, elegantly veined, the transverse veinlets usually uniting in 2 lateral nerves on each side of the midrib. Scape 1-flowered, rarely above 6 in. high, without any or with a single empty bract near the base, the terminal pedicel subtended by a rather broad very acute bract of 4 to 8 lines. Galea incurved, acuminate, fully 1¼ in. long, rather broad, striate; lower lip erect, broadly cuneate, deeply 2-lobed, at least ¾ in. long besides the long subulate points which embrace the galea. Labellum-claw flat and thin, about 1 line long; lamina oblong-linear, ending in 2 narrow lobes of about 1 line, the basal appendage linear-subulate, curved upwards, with a terminal tuft of setæ. Column nearly as long as the labellum, reflexed lobe of the wings oblong and obtuse, the erect lobe smaller lanceolate and acute.—Lindl. Gen. and Sp. Orch. 391; Reichb. f. Beitr. 35.

Queensland. Port Curtis, *R. Brown;* Brisbane river, Moreton bay, *F. Mueller, Fitzalan, Bailey.*

N. S. Wales. Port Jackson, *R. Brown, Harvey, Woolls.*
We have also what appears to be the same species from New Caledonia.

2. **P. concinna,** *R. Br. Prod.* 326. Nearly allied to *P. ophioglossa*, but a smaller plant. Leaves radical, under 1 in. long, ovate or broadly oblong, the petiole usually longer than in *P. ophioglossa*, the venation the same. Scape 1-flowered, rarely above 1 in. long and usually with an empty bract at or below the middle, besides the sheathing bract at the base of the terminal pedicel. Galea broader and more incurved than in *P. ophioglossa*, and under 1 in. long; lower lip also broader and shorter, the lobes more divaricate, the long points fine or slightly clavate. Labellum rather shorter than the column, broader than in *P. ophioglossa*, the terminal lobes or teeth very short and broad. Column-wings with the erect lobe acutely acuminate and rather long.—Lindl. Gen. and Sp. Orch. 391; Hook. Journ. Bot. i. 274, t. 136; Reichb. f. Beitr. 34; *P. acuminata*, Sieb. Pl. Exs. not of R. Br.

N. S. Wales. Port Jackson, *R. Brown, Caley, Sieber, n.* 157, and many others.
Victoria. Towards Brighton, *F. Mueller.*
S. Australia? Bugle Range, *F. Mueller;* the identification rather doubtful.
I do not find the tubercles at the base of the labellum mentioned by Reichenbach fil. Beitr. 34, nor are they represented in the excellent figure above mentioned. The plate in Bot. Mag. t. 3400 appears to me rather to represent one of the long-flowered forms of *P. curta.*

3. **P. curta,** *R. Br. Prod.* 326. Leaves in a radical rosette, usually on long petioles, ovate or broadly elliptical, 5- to 9-nerved, from under 1 in. to 1½ in. long. Scapes 1-flowered, usually about 6 in. high, with 1, 2 or 3 long loosely sheathing empty bracts besides the one subtending the terminal pedicel. Galea erect, about 1¼ in. long, acute but not acuminate. Lower lip cuneate, with 2 broadly lanceolate lobes, not so long as the galea and only shortly acuminate in the typical form. Labellum linear, obtuse and entire, rather longer than the column, the surface papillose, the basal appendage linear curved and penicillate. Column 7 to 8 lines long, with the basal projection rather long; wings with the lower lobe oblong and obtuse, the upper lobe short and broad with a narrow point at the front angle.—Lindl. Gen. and Sp. Orch. 390; Hook. f. Fl. Tasm. ii. 18; Bot. Mag. t. 3086; Reichb. f. Beitr. 35.

N. S. Wales. Port Jackson, *Caley, A. Cunningham, Woolls;* Liverpool, *Leichhardt;* Twofold bay, *F. Mueller.*
Victoria. Wonda Vale, *Robertson;* Melbourne, *Adamson;* Darebin Creek, Mount Disappointment, *F. Mueller.*
Tasmania. Port Dalrymple, *R. Brown;* common in shady places, *J. D. Hooker.*
S. Australia. Barossa, Lofty and Bugle ranges, *F. Mueller.*

Var.? *grandiflora.* Flowers above 2 in. long, the lobes of the lower lip ending in long points.

Queensland. Brisbane river, Moreton bay, *F. Mueller;* also in *Leichhardt's* collection.
N. S. Wales. Paramatta, *Woolls:*

4. **P. acuminata,** *R. Br. Prod.* 326. Leaves in a radical rosette, ovate or broadly elliptical and 5- or 7-nerved as in *P. curta*, some forms

of which this species closely resembles. Scape 1-flowered, 6 to 9 in. high with 1 or rarely 2 empty sheathing bracts besides the one embracing the terminal pedicel. Galea 1 to 1¼ in. long, erect but much incurved about the middle, and usually produced into a point; lower lip narrow cuneate, contracted into a claw, the lobes lanceolate and produced into long fine points embracing the galea. Labellum oblong-linear, tapering to a point. Column with a short basal projection, lower lobe of the wings broad and obtuse, upper lobe broad and scarcely prominent, with a linear point at the front angle.—Lindl. Gen. and Sp. Orch. 391; Bot. Mag. t. 3401; Reichb. f. Beitr. 36.

N. S. Wales. Port Jackson to the Blue Mountains, *R. Brown, A. Cunningham, Woolls.*

5. **P. nutans,** *R. Br. Prod.* 327. Leaves in a radical rosette, petiolate, ovate or elliptical, ½ to 1½ in. long. Scape 1-flowered, 6 in. to 1 ft. high, usually with a single long loosely sheathing empty bract besides the one under the terminal pedicel. Galea nearly 1 in. long, much curved near the base and again towards the end, so as to give the flower a nodding appearance, obtuse or acuminate in front; lower lip shortly and broadly cuneate, the lobes long and lanceolate, tapering into long points embracing the galea. Labellum oblong-linear, obtuse, 4 to 5 lines long, the surface smooth but sometimes minutely ciliate, the basal appendage narrow-linear, curved, penicillate. Column ¾ the length of the galea, the wings with a broadly oblong obtuse lower lobe and only a very small upper lobe or tooth, the stigma usually long and conspicuous.—Lindl. Gen. and Sp. Orch. 391; Hook. f. Fl. Tasm. ii. 18; Bot. Mag. t. 3085; Reichb. f. Beitr. 37.

Queensland. Brisbane river, Moreton bay, *Bailey.*
N. S. Wales. Port Jackson to the Blue Mountains, *R. Brown, Caley, Sieber, n.* 155, and many others.
Victoria. Portland bay, *F. Mueller;* E. Gipps' Land, *Walter.*
Tasmania. Port Dalrymple, *Paterson;* common in shady places in a poor soil, *J. D. Hooker,* and others.
S. Australia. Mount Gambier, *F. Mueller.*

6. **P. pedunculata,** *R. Br. Prod.* 327. Leaves in a radical rosette on rather long petioles, ovate or broadly oblong, ½ to 1 in. long, thin and usually 5-nerved. Scape 1-flowered, under or over 6 in. high, with 2 to 4 loosely sheathing empty bracts besides the one subtending the terminal pedicel. Galea about ½ in. long or rather more, erect but abruptly curved towards the end, acute or terminating in front in a short point; lower lip broadly cuneate, the entire part about 4 lines long, the lobes lanceolate with long points abruptly turned up and embracing the galea. Labellum oblong, very obtuse, 2 to 2½ lines long, thickened and pubescent on the surface along the centre towards the end, basal appendage rather long, linear, curved, dilated at the end and usually penicillate with few cilia. Column-wings broad, the upper front angle with a long almost hair-like tooth, the lower lobe recurved, broadly lanceolate, obtuse.—Lindl. Gen. and Sp. Orch. 391; Hook. f. Fl. Tasm. ii. 19, t. 114 A; Reichb. f. Beitr. 36.

N. S. Wales. Cudgee, *R. Cunningham*: Grose river, *Miss Atkinson*, apparently the same species, although the basal appendage of the labellum has no tuft of cilia at the end.

Tasmania. Port Dalrymple, *R. Brown*; abundant in shady places, *J. D. Hooker*, and others.

7. **P. nana,** *R. Br. Prod.* 327. Near *P. pedunculata*, but a smaller and more slender plant. Leaves in a radical rosette, ovate, acute, usually only ¼ in. and rarely ½ in. long. Scape with a single empty sheathing bract, which as well as the one subtending the terminal pedicel is usually more acute and spreading than in *P. pedunculata*. Galea as in that species but little above ½ in. long, erect, abruptly curved towards the end, but obtuse or scarcely acute in front. Lower lip broadly cuneate, about 4 lines long without the lobes, which are linear-subulate, only shortly dilated at the base and separated by the broad truncate apex of the lip, with usually a small inflexed tooth in the middle, the long points of the lobes embracing the galea. Labellum linear, obtuse, about 2 lines long, the surface glabrous, the basal appendage linear, curved, with few setæ at the end usually 2 only of which are deeply divided into 3. Column scarcely more than half the length of the galea, the wings with a small lanceolate upper lobe or tooth, the lower lobe oblong and obtuse.—Lindl. Gen. and Sp. Orch. 391; Reichb. f. Beitr. 37; Hook. f. Fl. Tasm. ii. 19, but not the plate 114 B, which may perhaps have been taken from *P. concinna*.

Victoria. Wendu Vale, *Robertson*; Port Phillip, *F. Mueller*.

Tasmania. Port Dalrymple, *R. Brown*; Woolnorth and Circular Head, *Gunn*; Bagdad, *Miss Forster*; Oyster Cove, *Milligan*; Southport, *C. Stuart*.

S. Australia. Mount Gambier, *Mrs Wehl*.

W. Australia. Swan river, *Drummond* (doubtful); Blackwood river, *Oldfield*; Monjerup, *F. Mueller*; Upper Hay river, *Miss Warburton*.

8. **P. pyramidalis,** *Lindl. Swan Riv. App.* 53, *Gen. and Sp. Orch.* 388. Very closely allied to *P. nana* and the flower almost identical in size and structure, but usually a rather taller and stouter plant and the leaves not strictly rosulate, but collected at or near the base of the stem and passing gradually into the smaller sessile stem-leaves or empty bracts which are nearly all spreading and leaf-like, thus placing the species in a different division of the genus as usually adopted. Lower lip of the perianth truncate, with an inflexed lobe or tooth between the antenna-like lobes as in *P. nana*, and thus readily distinguished from *P. pedunculata* in which the lanceolate bases of the lobes are separated by an acute sinus.—*P. barbata*, Endl. in Pl. Preiss. ii. 5, not of Lindl. (*Reichb. f.*)

W. Australia. Swan river, *Drummond*; Gordon river, *Oldfield*; Lake Muir, *Muir*.

9. **P. cucullata,** *R. Br. Prod.* 327. Usually a low plant, rarely much above 6 in. with a single large flower. Leaves crowded at the base of the stem and sometimes almost rosulate, often larger than in any other species, ovate or oblong-elliptical, 1 to 3 in. long, passing into 1 to 3 empty almost leaf-like bracts, the one subtending the terminal pedicel very loosely sheathing, ovate-lanceolate, above 1 in. long. Galea

erect, incurved, acute or shortly acuminate, 1¼ to 1½ in. long, minutely glandular-scabrous or papillose-pubescent outside; lower lip rather narrowly cuneate, the entire part about ½ in. long, the lobes lanceolate, tapering into fine points embracing the galea but not attaining its length. Labellum oblong-linear, equal in breadth or tapering towards the end, but always rounded at the end, about half as long as the galea, the basal appendage linear, curved, dilated and penicillate at the end. Column as long as the labellum, the upper margin of the wings rounded with a short linear lobe or tooth at the front angle, the lower lobe oblong.—Lindl. Gen. and Sp. Orch. 390; Hook. f. Fl. Tasm. ii. 19, t. 115; Reichb. f. Beitr. 36; *P. dubia*, R. Br. Prod. 328, Lindl. l.c.; Reichb. f. Beitr. 42; *P. scabrida*, Lindl. l.c. 389.

Victoria. Port Phillip, *C. French;* Brighton Scrub, *Gulliver;* Gipps' Land, *F. Mueller.*

Tasmania. Port Dalrymple, *R. Brown;* common on poor soil in shaded places, *J. D. Hooker*, and others.

S. Australia. Mountains round St. Vincent's Gulf, *F. Mueller.*

Brown's specimen of *P. dubia*, from Derwent river, is a very unsatisfactory one, but appears to be a starved state of *P. cucullata*. In the Tasmanian specimens distinguished by Lindley as *P. scabrida*, the leaves are smaller, and the aspect somewhat different from the usual luxuriant habit of *P. cucullata*, but the two forms pass too much into each other to be distinguished as varieties.

10. **P. furcata,** *Lindl. Gen. and Sp. Orch.* 390. Very near *P. cucullata*, and perhaps a variety only, with a similar large erect solitary flower from within a large acuminate loosely sheathing bract, but the lower leaves are smaller, less crowded at the base of the stem or the lowest small and distant, and the bracts on the stem rather more leaf-like, the flower is perfectly glabrous outside, and the lobes of the lower lip end in longer fine points embracing the galea. The internal structure of the flower is the same as in *P. cucullata*.—Hook. f. Fl. Tasm. ii. 20.

Victoria? Some specimens from Plenty Range, *F. Mueller*, seem referrible rather to this species than to *P. cucullata*.

Tasmania. Shaded places, near Launceston and Deloraine, *Gunn;* Chudleigh and Cheshunt, *Archer;* Southport, *C. Stuart;* Hampshire Hills, *Milligan.*

P. dubia, Hook. f. Fl. Tasm. ii. 20, t. 115, seems to belong to this species rather than to *P. cucullata*, to which I would refer Brown's specimen so named. The two are, however, perhaps varieties only of one species.

11. **P. grandiflora,** *R. Br. Prod.* 327. Stems slender, 1-flowered, about 6 in. high, without any radical rosette of leaves at the time of flowering. Leaves along the stem, lanceolate, acuminate, not differing from the bract subtending the terminal pedicel. Galea above 1 in. long, abruptly curved forward about the middle, the petals as well as the dorsal sepals ending in front in short points; lower lip with the entire part broadly cuneate, fully ½ in. long, truncate as in *P. nana* and *P. obtusa*, leaving a very broad straight and scarcely notched sinus between the lobes, which are very shortly dilated at the base, tapering into long filiform antenna-like points embracing the galea. Labellum oblong-linear at the base, tapering into a long filiform glabrous point somewhat clavate at the end; the basal appendage linear, curved, penicillate.

Column-wings with an erect linear acute lobe at the front angle, the lower lobe oblong, obtuse.—Lindl. Gen. and Sp. Orch. 387; Guillem. Ic. Pl. Austral. t. 6; Reichb. f. Beitr. 39.

N. S. Wales. Port Jackson to the Blue Mountains, *Caley, Woolls.*

12. **P. reflexa,** *R. Br. Prod.* 327. Stems slender, 6 to 9 in. high, glabrous or minutely scabrous-pubescent or papillose, without any rosette of radical leaves at the time of flowering. Leaves or empty scales lanceolate, erect or slightly spreading, acuminate, under 1 in. long in the typical form, and none usually so long as the bract subtending the terminal pedicel, more leaf-like and longer in some varieties. Galea 1¼ to above 1½ in. long, curved but not abruptly so, the petals as well as the sepal tapering into fine points; lower lip cuneate at the base, the lobes lanceolate, separated by a sinus much narrower than in *P. grandiflora*, and almost acute, tapering into long filiform points embracing the galea. Labellum more or less lanceolate and tapering towards the end into a long or short point; the basal appendage linear, curved, penicillate at the end. Column-wings with a small erect acute lobe at the front angle, the lower lobe oblong and obtuse.—Lindl. Gen. and Sp. Orch. 387; Reichb. f. Beitr. 38; *P. revoluta*, R. Br. Prod. 327; Lindl. l.c. 389; Reichb. f. l.c.; *P. scabra*, Lindl. Swan Riv. App. 53; Orch. Gen. and Sp. 388; *P. pyramidalis*, Endl. in Pl. Preiss. ii. 5, not of Lindl.

N. S. Wales. Port Jackson, *R. Brown, Woolls,* and others; New England, *C. Stuart;* Mudgee, *Taylor.*

Victoria. Grampians and Wimmera, *F. Mueller;* Little river, *Fullagar:* East Gipps' Land, *Walter.*

S. Australia. Mount Lofty ranges, *F. Mueller.*

W. Australia. Swan river, *Drummond, 1st coll., Preiss, n.* 2203, and others; Vasse river, *Oldfield;* Hampden, *Clarke;* Grenough Flats, *C. Gray.*

In the typical form the flowers are not very large, and the labellum has a long fine point. In Brown's *P. revoluta* the flowers are considerably larger, and the labellum tapers towards the end, but without the long point of *P. reflexa*. Some of Woolls's specimens have the long flowers of *P. revoluta*, with the labellum of *P. reflexa*. Most of the Victorian, South Australian and Western specimens have shorter, more leafy stems, with the labellum of *P. revoluta*, many of the Western ones are more or less scabrous-pubescent. The Gipps' Land specimens are remarkably tall and pubescent. The long and short pointed labella and large and smaller flowers, however, pass so much one into another, that I have been unable to sort the specimens into distinct varieties. It is possible, however, that their study in a fresh state may point out more appreciable characters.

13. **P. præcox,** *Lindl. Gen. and Sp. Orch.* 388. Very nearly allied to *P. obtusa*, but the leaves usually more developed, green, narrow-linear or linear-lanceolate, the lower lip of the perianth less truncate between the lobes, and the labellum tapering above the middle into a rather obtuse or almost acute point, like that of the shorter-pointed forms of *P. reflexa*, from which species this one may be most readily distinguished by the narrow leaves smaller flowers and broader sinus between the lobes of the lower lip of the perianth.—Hook. f. Fl. Tasm. ii. 21; *Diuris alata*, Labill. Pl. Nov. Holl. ii. 59, t. 210; *P. alata*, Reichb. f. Beitr. 70.

Victoria. Wilson's Promontory, *F. Mueller;* Wendu Vale, *Robertson* (the specimens in fruit only, and therefore doubtful).
Tasmania. Circular Head, *Gunn;* Hobarton, *J. D. Hooker;* Flinders island, *Milligan.*

14. **P. obtusa,** *R. Br. Prod.* 327. Stems slender, 1-flowered, usually about 6 in. high, without any radical leaves at the time of flowering but often from a separate branch of the rhizome a rosette of ovate 5-nerved leaves like those of *P. concinna*. Stem-leaves or bracts lanceolate, acuminate, ½ to ¾ in. long, not different from the uppermost bract which subtends the terminal pedicel, the lower ones reduced to sheathing scales. Galea incurved, ¾ to near 1 in. long, besides the point which varies from 2 to 6 lines; lower lip with the entire part very broadly cuneate, almost truncate, 4 to 5 lines long, the lobes very divaricate separated by a broad sinus notched in the centre, tapering into long subulate antenna-like points embracing the galea. Labellum the length of the column, oblong-linear, equally broad throughout and very obtuse, the basal appendage linear, curved, penicillate, the tuft consisting usually of 2 ciliate setæ. Column-wings with a prominent tooth or linear upper lobe at the front angle, the lower lobe oblong, the stigma very prominent.—Lindl. Gen. and Sp. Orch. 389; Hook. f. Fl. Tasm. ii. 19, t. 115 C; Reichb. f. Beitr. 38.

N. S. Wales. Port Jackson, *R. Brown, Woolls;* New England, *C. Stuart.*
Tasmania. Common in the northern parts of the island, *J. D. Hooker;* Southport, *C. Stuart.*

15. **P. recurva**, *Benth.* Stems 1 to 1½ ft. high, rigid, 1- or sometimes 2-flowered, without any radical rosette, the lower leaves reduced to small scales gradually increasing to linear or linear-lanceolate leaves of 1 to 2 in., the bract subtending the pedicel more lanceolate and sometimes shorter. Galea erect, above 1 in. long, not very broad and not much curved, the dorsal sepal as well as the petals ending in recurved points apparently variable in length; lower lip as long or longer than the galea, narrow-cuneate, divided to the middle into lanceolate lobes erect and embracing the galea, but recurved at the end and terminating in reflexed points of 2 to 6 lines. Labellum tapering towards the end but obtuse, the basal appendage linear, elongated, curved, bifid and penicillate at the end, but the tuft consisting of very few cilia.

N. Australia, *Drummond;* Upper Hay river, *Miss Warburton.*—A well-marked species, of which however I have seen but very few specimens.

Series 2. Parvifloræ.—Stems leafless at the time of flowering except empty sheathing scarious bracts, the leaves in radical rosettes at a different time of year, or if contemporaneous from a different branch of the rhizome. Flowers under ½ in. long, 2 or more in a raceme, very rarely reduced to 1. Basal appendage of the labellum short, entire or with 2 or 3 teeth or setæ.

16. **P. Daintreana,** *F. Muell. Herb.* Leaves (only seen in an imperfect state) like those of *P. parviflora*, small, ovate, in a radical rosette by the side of the scape or flowering stem. Scape slender, above 6 in.

high, with 3 or 4 empty sheathing bracts, the upper ones, like the bracts subtending the pedicels, produced into fine points. Flowers 4 or 5, distant, nearly the size of but much more slender than those of *P. parviflora*. Galea 3 to 3½ lines long, obtusely hood-shaped, produced in front into a long fine point; lower lip narrow, the entire part about 1 line long, the lobes narrow, produced into long fine points embracing the galea. Labellum narrow, obtuse and entire at the end, sagittate at the base with obtuse auricles and a small obtuse entire appendage between them. Column reaching to the end of the galea, the wings very broad with a small point at the upper front angle, the lower slender portion of the column bordered by narrow wings, the stigma scarcely prominent.

N. S. Wales. Near Sydney, *Daintree*, very few specimens in Herb. F. Mueller.

17. **P. parviflora,** *R. Br. Prod.* 327. Leaves in radical rosettes appearing at a different time of year from the flowering stem or if contemporaneous in a tuft by the side of it, ovate, under ½ in. and often only ¼ in. long, on a rather long petiole. Scape slender, 4 to 8 in. long, with 2 or 3 empty bracts or small sheathing leaves and a raceme of 2 to 5 small flowers. Galea much incurved, scarcely 5 lines long, very acute or shortly acuminate; lower lip cuneate, the entire part about 2 lines long, the lobes much incurved, the inner margin involute at the base, tapering into points variable in length but always shorter than the galea. Labellum very short, obtuse but entire, the basal appendage short and slender, terminating in the specimens examined in a tuft of 3 setæ. Column slender, the wing from a narrow base very prominent, with a narrow point at the upper outer angle, and a broad lower lobe.—Lindl. Gen. and Sp. Orch. 389; Hook. f. Fl. Tasm. ii. 22; Reichb. f. Beitr. 40.

Queensland. Brisbane river and Moreton island, *F. Mueller.*
N. S. Wales. Port Jackson, *R. Brown, Woolls;* Aitken Creek, *A. Cunningham.*
Victoria. Wilson's Promontory, *F. Mueller.*
Tasmania. Port Dalrymple, *R. Brown;* Huon river, *Oldfield;* Hobarton, *J. D. Hooker;* Cheshunt, *Archer.*

18. **P. aphylla,** *Lindl. Gen. and Sp. Orch.* 392. A smaller but rather stouter plant than *P. parviflora*, with the same foliage according to Archer and C. Stuart, but the radical tufts entirely gone at the time of flowering. Stems 3 to 5 in. high, with 1 to 3 flowers, which, when more than one, front each other in a peculiar way as described by C. Stuart and even apparent on dried specimens, but of which I see no trace in *P. parviflora*. Galea of the size of that of *P. parviflora* but rather broader and more obtuse, the lower lip with shorter points and the basal appendage of the labellum obtuse and undivided in the specimen examined, without even the 3 short points figured by Fitch.—Hook. f. Fl. Tasm. ii. 22, t. 116.

Tasmania. Huon river, *Oldfield;* Circular Head, *Gunn;* Cheshunt, *Archer;* Mersey river and plains near Southport, *C. Stuart.*

Sect. 2. Catochilus.—Lower lip of the perianth very spreading or reflexed from the base, or recurved from the middle, the lobes short

or narrow. Basal appendage of the labellum-lamina entire and obtuse, or sometimes almost obsolete.

19. **P. barbata,** *Lindl. Swan Riv. App.* 53, *Gen. and Sp. Orch.* 388. Stems 1-flowered, from under 6 in. to nearly 1 ft. high. Leaves crowded at the base of the stem, ovate-lanceolate or lanceolate, acute or shortly acuminate, ½ to 1 in. long, sometimes extending halfway up the stem, sometimes almost rosulate at the base, passing more or less gradually into erect loosely sheathing bracts, the uppermost subtending the terminal pedicel. Galea erect, oblong, 1 in. long or rather more, the petals as well as the dorsal sepal ending in short subulate points; lower lip linear, very spreading recurved or reflexed, the lobes narrow, obtuse or ending in fine points. Labellum ½ to ¾ in. long, linear-terete or filiform, bearded with long yellow hairs except at the end, where it bears a broad glabrous nearly square complicate entire or toothed appendage, and at the base where it is glabrous, thickened and produced beyond the insertion on the claw into a short narrow appendage glabrous or shortly ciliate. Column slender, the wings broad, with the upper lobe from the front angle almost setiform, long and ciliate at the base, the lower lobe falcate-lanceolate, acute or obtuse, the lower part of the column very narrowly winged.—*P. squamata*, Lindl. Gen. and Sp. Orch. 388; Hook. f. Fl. Tasm. ii. 20, t. 116, not of R. Br.

Victoria. Wendu Vale, *Robertson.*
Tasmania. Common in sandy soil, *J. D. Hooker* and others.
S. Australia. Mount Lofty ranges, *F. Mueller.*
W. Australia. Swan river, *Drummond, 1st coll.*; King George's Sound, *Muir*; Mount Barker, *F. Mueller.*

The species is also in New Zealand.

20. **P. turfosa,** *Endl. in Pl. Preiss.* ii. 5. Stem short, slender, 1-flowered. Leaves short, linear, acuminate, all nearly equal and equally distributed along the stem, the upper one or bract subtending the terminal pedicel rather larger than the others. Galea erect, much like that of *P. barbata* but with a long filiform point, the linear lower lip also with long points to the lobes. Labellum linear-terete, bearded with long rigid hairs as in *P. barbata*, the end unknown, being broken off from the only specimen seen by Reichenbach, the basal appendage oblong-linear, incurved, obtuse at the end, glabrous. Column-wings with a long erect subulate upper lobe on the front angle, the lower lobe also long, oblong, ciliate at the end.

W. Australia. Stirling terrace, *Preiss, n.* 2632.—I have not seen any specimen; the above character is taken from a sketch and description sent to me by Reichenbach fil., and drawn up by him from the only known specimen now in the Lund Herbarium.

21. **P. mutica,** *R. Br. Prod.* 328. Leaves in a radical rosette at the base of the flowering stem sometimes but not usually withering away at the time of flowering, ovate, very shortly petiolate or almost sessile, mostly ½ to ¾ in. long. Stem 4 to 8 in. high, with 1 to 5 empty sheathing bracts, besides those subtending the pedicels, all obtuse or the

upper ones acute. Flowers 5 to 10, in a slightly spiral spike. Galea broad, much incurved, obtuse, about 3½ lines long; lower lip little more than 2 lines long and at least as broad, concave, reflexed, with 2 short broad obtuse lobes. Labellum on a rather long flat claw, broad, very obtuse, scarcely 1½ lines long, the basal lobe or appendage nearly as broad at the base, narrow, thick, obtuse and entire or emarginate at the end. Column reaching to the end of the galea; the wings broad, without any upper lobe or tooth, the lower lobe broad and obtuse.—Lindl. Gen. and Sp. Orch. 390; Hook. f. Fl. Tasm. ii. 21, t. 117; Reichb. f. Beitr. 42.

Queensland. Brisbane river, Moreton bay, *F. Mueller, Leichhardt.*
N. S. Wales. Port Jackson, *R. Brown, Woolls,* and others; Emu plains, *A. Cunningham;* New England, *C. Stuart;* southward to Illawarra, *Backhouse;* Gabo island, *F. Mueller.*
Victoria. Wendu Vale, *Robertson;* Melbourne, *Adamson;* Darebin Creek, Mount Disappointment, Grampians, &c., *F. Mueller.*
Tasmania. Common in rich pastures as well as in light sandy soil, *J. D. Hooker.*
S. Australia. Mount Gambier and Rivoli bay, *F. Mueller.*

22. **P. rufa,** *R. Br. Prod.* 327. Leaves in a radical rosette at the base of the stem, but most frequently withering away before the flowering, ovate, obtuse or acute, ½ to 1 in. long. Stem 6 to 10 in. high, with 2 to 4 loosely sheathing rather scarious empty bracts usually acute, besides the bracts subtending the pedicels. Flowers usually 3 or 4 in a short raceme. Galea about 5 lines long, hood-shaped, produced in front into a fine point 10 lines long in the typical form, very much longer in some varieties; lower lip on a rather long basal projection of the column, reflexed from it, broadly cuneate, 3 to 4 lines long without the points, divided to the middle into broadly lanceolate lobes ending in fine points, varying in length like that of the galea. Labellum on a short claw, ovate-oblong or narrow, concave or with involute margins, scarcely 1½ lines long, obtuse, bordered by few or many marginal cilia rarely entirely wanting, usually 1 long one on each side near the base, the basal appendage short, thick, entire, rugose, often ciliate. Column reaching to the end of the galea, the wings broad and nearly square, with a small point at the upper front angle, the lower angle or short broad lobe often ciliate, the middle part of the column narrowly winged.—Lindl. Gen. and Sp. Orch. 390; Hook. f. Fl. Tasm. ii. 21, t. 116; Reichb. f. Beitr. 41.

Queensland. Rockhampton, *Thozet.*
N. S. Wales. Port Jackson, common, *R. Brown, Woolls,* and others; New England, *C. Stuart;* Darling river, *Dallachy;* Upper Bogan and Lachlan rivers, *F. Marsh.*
Victoria. Murray river, *F. Mueller;* Wimmera, *Dallachy.*
Tasmania. Port Sorell, *Archer;* Meander river, *C. Stuart.*
S. Australia. Spencer's and St. Vincent's gulfs, *F. Mueller.*
W. Australia, *Drummond.*

The species varies much in stature, in the persistence of the radical leaves, in the size of the flowers, and especially in the length of the sepal-points. The following are the principal forms which have been distinguished mostly as species, but which pass very gradually into each other.

P. gibbosa, R. Br. Prod. 328; Lindl. Gen. and Sp. Orch. 390; Reichb. f. Beitr. 41,

from Port Jackson, appears to me to be merely a tall-growing luxuriant state of the typical short-pointed form.

P. squamata, R. Br. Prod. 327, Reichb. f. Beitr. 41, not of Lindl., from Table Mountain (Mount Wellington), Tasmania, is a small-flowered variety with short points, in which the radical leaves are persistent, and the scarious empty scales more numerous. Almost similar small-flowered specimens, but with fewer empty scales, were gathered with large-flowered ones, in New England by *C. Stuart*.

P. Mitchelli, Lindl in Mitch. Trop. Austr. 365, from Mount Kennedy on the Maranoa, *Mitchell*, is a rather large-flowered form with long points to the sepals, the labellum narrow with usually numerous cilia. These cilia are marginal as in the other varieties, but owing to the involution of the margins appear to be along the upper surface as described. Some other Queensland specimens closely resemble *P. Mitchelli* in every respect except that the labellum is broader. Some of the Lachlan and Darling river specimens have the sepal-points fully ½ in. long, and in two specimens in Herb. F. Mueller, one from Queensland, *Bowman*, the other from Salt Creek, S. Australia, *F. Mueller*, these points vary from ¾ to above 1 in. in length.

23. **P. longifolia,** *R. Br. Prod.* 327. Stems rather slender, but often 1 ft. high or rather more, without any radical rosette, the lower leaves reduced to short sheathing scales, those at and above the middle of the stem linear or linear-lanceolate, acute or acuminate, from under 1 to above 2 in. long, very shortly sheathing at the base. Flowers 3 to 7, in a terminal raceme. Galea 5 to 7 lines, more or less incurved above the ovary and again abruptly curved towards the end, acute or with a short point in front; lower lip reflexed, 4 to 5 lines long, oblong, divided usually to about half its length into 2 narrow-lanceolate lobes. Labellum on a very short claw, oblong, about 3 lines long, more or less papillose on the surface, with a short obtuse or 2-toothed papillose process at the end, the basal appendage very short, obtuse and usually erect. Column-wings very broad, nearly square or slightly hatchet-shaped, the margins ciliolate or entire.—Lindl. Gen. and Sp. Orch. 388; Hook. f. Fl. Tasm. ii. 22, t. 117; Reichb. f. Beitr. 40.

N. S. Wales. Port Jackson to the Blue Mountains, *R. Brown, Sieber, n.* 160, *A. and R. Cunningham*, and many others; Illawarra, *Backhouse*.

Victoria. Forest Creek, Mount Disappointment, Wilson's Promontory, Nangatta range, &c., *F. Mueller;* Grampians, *Fisher;* E. Gipps' Land, *Walter*.

Tasmania. Common in dry soil in forest land, *J. D. Hooker*.

S. Australia. Mount Lofty range, between Mount Gambier and Rivoli bay, *F. Mueller*.

The species varies much in the length and breadth of the leaf, in the size of the flowers, the length of the lobes of the lower lip and the precise form of the labellum, especially of its terminal appendage, and it seems sometimes almost to pass into *P. vittata*.

24. **P. vittata,** *Lindl. Swan Riv. App.* 53, *Gen. and Sp. Orch.* 389. Allied to *P. longifolia* and like that species without any rosette of radical leaves to the flowering stem, but usually a stouter and much more leafy plant. Stems 8 in. to above 1 ft. high, often angular in the dried state. Leaves lanceolate, narrow or broad, acute, usually clasping the stem with rounded auricles, the lower one or two reduced to sheathing scales. Flowers in a more compact raceme than in *P. longifolia*, the bracts more leaf-like. Galea 5 to 6 lines long, broad, very much curved near the base and above the middle so as to be quite helmet-

shaped, with a short point in front directed downwards; lower lip rather broadly ovate, shorter than the galea, concave, recurved, with 2 short acuminate lobes. Labellum on a rather long claw, oblong, about 2 lines long, slightly contracted and emarginate or 2-lobed at the end, the margins ciliate, the basal appendage scarcely more than an obtuse thickening of the base of the lamina, and usually with a thick seta or linear tooth on one or both margins just above the base. Column-wings with an oblong lower lobe densely ciliate at the end, the middle of the column rather broadly winged.—Endl. in Pl. Preiss. ii. 5.

S. Australia? Some specimens from Bugle range, *F. Mueller*, mixed in his herbarium with others of *P. longifolia* from Third Creek, under the name of *P. præcocissima* appear to belong rather to *P. vittata*.

W. Australia. Swan river, *Drummond*; King George's Sound and adjoining districts, *Maxwell*, *Preiss*, *n.* 2201, 2202, *Muir*, *Miss Warburton*; Vasse river, *Oldfield*; Hampden, *Clarke*.

I have been unable to ascertain whether the form of the column-wings be as constantly distinct from that prevailing in *P. longifolia* as it appeared in the few flowers examined.

37. CALEANA, R. Br.

Sepals and petals all linear, the dorsal sepal erect, the lateral sepals and petals spreading or reflexed (but the position apparently reversed by the resupination of the flower on the ovary). Labellum articulate at the base of the column or at the end of its basal projection and moveable, with a linear incurved claw, the lamina ovate or oblong, peltate, convex, entire, shorter below than above its insertion, the surface smooth or tuberculate. Column elongated, sometimes produced at the base into a linear projection, very broadly 2-winged in its whole length. Anther erect, not mucronate, the 2 cells distinct and nearly equally 2-valved. Pollen-masses granular.—Terrestrial glabrous herbs, with small underground tubers. Leaf linear lanceolate or oblong, solitary at the base of the stem which has also occasionally a small empty bract at or below the middle. Flowers 1 to 3 or rarely 4, shortly pedicellate, the subtending bracts acute. Ovary usually recurved, reversing the flower.

The genus is limited to Australia. Allied to *Drakæa*, it is readily known by the large petal-like wings of the column, forming a kind of pouch open or closed by the elastic motions of the lid-like labellum.

Claw of the labellum and lateral sepals inserted at the base of the column . . . . . 1. *C. major.*
Claw of the labellum and lateral sepals inserted at the end of a basal projection of the column.
Leaf narrow linear. Eastern species . . . . . 2. *C. minor.*
Leaf ovate or lanceolate. Western species . . . . . 3. *C. nigrita.*

1. **C. major,** *R. Br. Prod.* 329. Leaf radical, linear or narrow-lanceolate, 2 to 4 in. long. Stem often above 1 ft. high, with a single closely appressed empty sheathing bract below the middle, and 1 to 4 red flowers on very short pedicels, the subtending bracts 2 to 4 lines long. Dorsal sepal narrow-linear, rather thick, channelled, erect or incurved

below the middle, often ¾ in. long; lateral sepals narrow-linear, acuminate, reflexed (erect by the reversion of the flower) about 6 lines long; petals still narrower and shorter, erect (with reference to the floral axis). Labellum affixed to the base of the column, the claw linear, flat, incurved, about 3 lines long; lamina peltately attached, broadly ovate, fully 4 lines long and nearly as broad, shortly and broadly acuminate at each end, the upper surface smooth, the centre inflated and hollow, the cavity open on the under side. Column 4 to 5 lines long, bordered on each side from the base to the anther with a petal-like coloured wing about 3 lines broad. Stigma obscurely 2-pointed.—Lindl. Gen. and Sp. Orch. 429; Hook. f. Fl. Tasm. ii. 18, t. 107 A; Reichb. f. Beitr. 44; *Caleya major*, Endl. Iconogr. t. 8.

Queensland. Moreton bay, *F. Mueller.*
N. S. Wales. Port Jackson, *R. Brown*, *Backhouse*, *Woolls;* Blue Mountains, *Miss Atkinson;* New England, *C. Stuart.*
Victoria. Mount Sturgeon, Mount Abrupt, Latrobe river, *F. Mueller;* Mount William, *Sullivan;* Gipps' Land, *Walter.*
Tasmania. Rocky Cape, *Gunn;* Cheshunt, *Archer;* Southport, *C. Stuart;* South Huon, *Oldfield;* N. W. Bay, *Milligan.*

2. **C. minor,** *R. Br. Prod.* 329. Leaf radical, narrow-linear. Stem slender, about 6 in. high, without any or very rarely with a single small empty bract below the middle. Flowers 1 to 3, much smaller than in *C. major*, on longer pedicels. Sepals and petals linear, nearly equal, 4 to 5 lines long, the dorsal one often dilated above the middle and attached as well as the petals immediately above the ovary, the lateral sepals however attached to the extremity of the basal projection of the column on each side of the stipes of the labellum, which is linear and incurved. Lamina of the labellum peltate and convex, but narrower than in *C. major*, and tuberculate on the surface, the upper lobe obtuse or shortly 2-lobed, the lower lobe or appendage very short. Column about as long as the sepals, the broad wing adnate also to the basal projection, which is at least half as long as the column itself and nearly erect whilst the column is more spreading, the whole forming a broad sac or pouch.—Lindl. Gen. and Sp. Orch. 429; Reichb. f. Beitr. 44.

N. S. Wales. Port Jackson, *R. Brown;* New England, *C. Stuart* (a single specimen in Herb. F. Mueller differing in some slight particulars from Brown's and Gunn's).
Tasmania. Hobarton, *Gunn.*

3. **C. nigrita,** *Lindl. Swan Riv. App.* 54, *Gen. and Sp. Orch.* 429. Leaf radical, small, ovate or broadly lanceolate. Stem about 6 in. high, without any empty bract. Flowers 1 to 3, on pedicels of ½ to 1 in. Sepals and petals linear, about 5 lines long, the dorsal sepal closely appressed to the column and apparently adnate to it at the base, the petals very narrow, the lateral sepals attached as in *C. minor* to the extremity of the basal projection of the column. Labellum with a claw of at least 3 lines, the lamina peltate, oblong, very convex, tuberculate on the surface, the upper end or lobe twice as long as the lower lobe or appendage, both ends obtuse or emarginate in the specimens examined.

Column nearly as long as the sepals, the broad wing adnate to the basal projection which is at least 2 lines long and forming a broad sac as in *C. minor*.—Endl. in Pl. Preiss. ii. 11.

W. Australia. Swan river, *Drummond, 1st coll. n.* 864.

38. DRAKÆA, Lindl.

(Spiculæa, *Lindl.*; Arthrochilus, *F. Muell.*)

Sepals and petals linear, the dorsal sepal erect, the lateral sepals and petals spreading or reflexed. Labellum articulate at the base of the column or at the end of its basal projection and moveable, with a linear claw; the lamina narrow, peltate, convex, shorter below than above its insertion. Column elongated, narrow, wingless except 1 or 2 pairs of narrow auricles variously placed. Anther erect, not mucronate, the 2 cells distinct and nearly equally 2-valved. Pollen-masses granular. Stigma large, orbicular, sometimes mucronate.—Terrestrial glabrous herbs, with small underground tubers. Leaf solitary at or near the base of the stem, usually broad, or none at the time of flowering. Scapes with 1 to 3 empty sheathing bracts. Flowers solitary or several in a raceme, the subtending bracts small and narrow. Labellum almost hammer-shaped and very irritable. Ovary straight or recurved, more or less reversing the flower.

The genus is limited to Australia, and is nearly allied to *Caleana*. The three species form one well-marked genus, the differences between *D.* (*Spiculæa*) *ciliata* and the original *D. elastica* correspond to those which distinguish *Caleana major* and *C. minor*.

Labellum articulate at the base of the column, without any intervening projection. Column with 2 pairs of auricles. Stem with 1 leaf. Flowers several . . . . . 1. *D. ciliata.*

Labellum articulate at the end of a basal projection of the column.

Lateral sepals adnate to the basal projection of the column. Stem leafless. Flowers several . . . . . 2. *D. irritabilis.*

Lateral sepals free from the linear basal projection. Leaf radical, ovate. Flowers solitary . . . . . 3. *D. elastica.*

1. **D. ciliata,** *Reichb. f. Beitr.* 68. Stem under 6 in., the leaf a little above the base, lanceolate or ovate-lanceolate, complicate, shortly sheathing and erect at the base, recurved upwards; and a single small empty bract higher up either closely appressed or slightly spreading and leaf-like. Flowers 2 to 6, on short pedicels, the bracts 1 to 2 lines long. Sepals and petals narrow-linear, the dorsal sepal erect, about 6 lines long, the lateral sepals and petals rather shorter, spreading or reflexed. Labellum nearly as long as the sepals, articulate at the base of the column, the claw very slender, incurved; the lamina hammer-shaped, peltately attached, the upper lobe recurved, above 1 line long, very convex, papillose-pubescent on the surface of the lower half, terminating in a smooth obtuse point; the lower lobe or basal appendage apparently similar to the lower half of the upper lobe. Column erect, incurved, narrow, the very narrow wings dilated about halfway up into 2 long linear-falcate ascending auricles, and at the anther into 2 linear

recurved auricles, with a short triangular lobe at the base of each on the upper side. Stigma without any or only with a very short terminal point.—*Spiculæa ciliata*, Lindl. Swan Riv. App. 56, with a woodcut, Gen. and Sp. Orch. 428; Endl. in Pl. Preiss. ii. 10.

W. Australia. Swan river, *Drummond*, *1st coll.*, *4th coll. n.* 325.

2. **D. irritabilis,** *Reichb. Beitr.* 68. Stems 6 in. to nearly 1 ft. high, leafless at the time of flowering except 1, 2 or 3 distant empty bracts sheathing at the base but sometimes spreading and almost leaf-like at the apex, and in one specimen the lowest is developed into a lanceolate complicate recurved leaf of nearly 1 in. Flowers green or whitish, often tinged with red, 3 to 8 on pedicels of 2 to 3 lines within small narrow bracts. Sepals and petals narrow-linear, slightly dilated above the middle, the dorsal sepal incurved, about 4 lines long, the lateral sepals and petals shorter, very spreading or reflexed, the former dilated at the base and adnate to the basal projection of the column. Labellum articulate at the end of the basal projection, the linear claw about 1 line long above the articulation, the lamina hammer-shaped and peltately attached, ciliate with long hairs on the upper surface, the upper lobe emarginate or terminating in a short smooth point, the lower lobe or appendage very obtuse and less hairy. Column incurved, with 2 narrow-linear acuminate auricles just under the stigma and 2 short points behind it.—*Arthrochilus irritabilis*, F. Muell. Fragm. i. 43.

Queensland. Brisbane river, Moreton bay, *W. Hill*, *F. Mueller*, *C. Prentice*; Rockingham bay, *Dallachy*.

C. Prentice collected in June, 1867, a specimen with the flowering stem proceeding from a tuft of lanceolate leaves 2 or 3 in. long. These may have been the ordinary leaves of the plant, which appear usually at a different time of year from the flowers; but in this instance the plant had probably flowered abnormally at the leafing time.

3. **D. elastica,** *Lindl. Swan Riv. App.* 55 *with a woodcut*, *Gen. and Sp. Orch.* 428. Leaf radical, broadly ovate-cordate or almost orbicular, apparently thick and fleshy, with recurved margins rarely above ½ in. diameter. Stem slender, 6 in. high or rather more, with a small empty sheathing bract below the middle, and a single flower on a pedicel much longer than the subtending bract. Sepals and petals linear, 5 to 6 lines long, the lateral sepals and petals reflexed, free from the basal projection, the dorsal sepal usually rather longer and erect. Labellum articulate at the end of the basal projection of the column, and "moving at the joint with every breeze," the claw narrow-linear, 3 lines long above the joint, the lamina hammer-shaped, peltately attached, broadly ovate but very convex and the sides completely folded back so as to conceal the under surface, the upper surface covered with short thick hairs or calli except the smooth tip, the lower lobe or appendage solid and fleshy, half as long as the upper one. Column nearly as long as the sepals, abruptly incurved in the middle, with very narrow wings produced into auricles at the base and somewhat dilated under the anther, the basal projection of the column supporting the labellum about 3 lines long and linear like the claw. Rostellum of

the stigma erect and sometimes nearly as long as the anther.—Endl. in Pl. Preiss. ii. 10.

W. Australia. Swan river, *Drummond, 1st coll.*; Cape Leschenault, *Oldfield*; King George's Sound, *F. Mueller, Muir*; known under the name of *Hammer Orchis*.

39. ACIANTHUS, R. Br.

Dorsal sepal erect or incurved over the column, concave, not very broad, and often produced into a fine point; lateral sepals narrow, erect or spreading; petals much shorter. Labellum about as long as the petals, sessile or nearly so, undivided, the margin entire, the disk smooth or papillose, with or without 2 adnate calli or tubercles at the base. Column erect or incurved, semiterete or 2-winged. Anther broad, erect, 2-celled, with broad outer valves, the connective sometimes produced into a short point; pollen granular, but less so than in *Caladenia* and more distinctly collected into 4 masses in each cell.—Terrestrial glabrous herbs, with small underground tubers. Leaf solitary, immediately above the basal scarious sheath or higher up the stem, broadly ovate-cordate. Flowers solitary or several in a terminal raceme, on a scape or stem without scales above the leaf, except the small bracts subtending the pedicels.

Besides the Australian species which are endemic, there is one from New Zealand. The genus is nearly allied to *Caladenia*, but without the calli and fringes to the labellum of that genus, a different foliage, and the pollen in two at least of its species appear to be of the more solid consistence of that of *Eriochilus*.

Column not winged. Sepals with fine points. Labellum oblong-lanceolate.
- Flowers 1 to 3. Dorsal sepal narrow, with a filiform point of ¾ to above 1 in. . . . . 1. *A. caudatus.*
- Flowers 3 to 10. Dorsal sepal with a point under 2 lines.
  - Dorsal sepal ovate-lanceolate. Labellum with 2 papillose lines on the surface . . . . . 2. *A. fornicatus.*
  - Dorsal sepal lanceolate, contracted at the base. Labellum smooth on the surface . . . . . 3. *A. exsertus.*

Column winged. Sepals without points. Labellum broader than long . . . . . 4. *A. viridis.*

1. **A. caudatus,** *R. Br. Prod.* 321. Stems slender, sometimes filiform, 3 to 6 in. high. Leaf at or near the base, deeply cordate, ovate, rarely above 1 in. long. Flowers 1 to 3, of a dark colour, on short pedicels within small bracts. Dorsal sepal tapering into a filiform point varying from ½ to above 1 in. long, not very broad in the lower part, and contracted again at the base; lateral sepals shorter, filiform, shortly and slightly dilated at the base; petals lanceolate, reflexed, about 2 lines long, with short points. Labellum almost or quite sessile, oblong-lanceolate, shortly acuminate, as long as the petals, the 2 basal adnate calli very prominent, lanceolate or acuminate, the surface of the lamina with very few papillæ. Column semiterete, not winged. Pollen apparently more granular than in the two following species.—Lindl. Gen. and Sp. Orch. 397; Hook. f. Fl. Tasm. ii. 25, t. 119; Reichb. f. Beitr. 26.

N. S. Wales. Port Jackson, *R. Brown, A. Cunningham, Woolls;* Blue Mountains, *Miss Atkinson.*

Tasmania. Common in moist shaded woods, *J. D. Hooker.*

2. **A. fornicatus,** *R. Br. Prod.* 321. Stem slender, 6 to 8 in. high. Leaf at the base or below the middle, broadly ovate or orbicular, deeply cordate and stem-clasping with broad rounded auricles, usually 1 to 1½ in. long, sometimes sinuate or even rather deeply 3-lobed. Flowers 4 to 10, on short pedicels; bracts ovate or lanceolate, acute. Dorsal sepal ovate-lanceolate, 3 to 4 lines long, erect, incurved, concave, acute and the midrib produced into a fine point of 1 to 1½ lines; lateral sepals nearly as long but linear, with a long point and angular or toothed on each side of the point, close together or shortly united under the labellum; petals lanceolate, about half as long as the dorsal sepal, with a short point. Labellum much shorter than the dorsal sepal but variable in length, nearly sessile or on an exceedingly short claw, oblong-lanceolate, acuminate, concave at the base with 2 very short raised longitudinal plates or calli, smooth along the centre, with 2 very prominent broad raised papillose lines parallel to the reflexed margins, the point smooth. Column not 2 lines long, much incurved, semiterete, not winged, often concealed in the dorsal sepal, but sometimes bent forward as in *A. exsertus.* Anther with a very short point. Pollen-masses (in the flowers examined) 4 in each cell, of the somewhat solid consistence of *Eriochilus* but obtuse at the base, and perhaps becoming granular at a later stage. Stigma very prominent.—Lindl. Gen. and Sp. Orch. 397; Endl. Iconogr. t. 16; Reichb. f. Beitr. 25.

Queensland. Brisbane river, Moreton bay, *F. Mueller;* Rockingham bay, *Dallachy;* Mount Wheeler, *Thozet.*

N. S. Wales. Port Jackson, *R. Brown, Sieber, n.* 159, and others.

F. Mueller, Fragm. v. 96, unites this and the following species under the name of *A. Brunonis.*

3. **A. exsertus,** *R. Br. Prod.* 321. A slender delicate plant, much resembling *A. fornicatus*, but smaller. Leaf deeply cordate, ovate or orbicular and often sinuate as in that species. Flowers rather smaller, 3 to 6 in the raceme, the pedicels very short. Dorsal sepal slightly incurved, concave, but narrow and much contracted at the base, about 3 lines long, including the short point; lateral sepals almost subulate; petals lanceolate, about half as long as the sepals. Labellum nearly as long as the sepals, oblong-lanceolate as in *A. fornicatus* but on a more distinct claw, the raised plates at the base rather longer and the surface of the lamina smooth or with very few papillæ in 2 rows. Column slender, not winged, about half as long as the sepals, incurved and protruding forwards from the dorsal sepal. Pollen of *A. fornicatus.*—Lindl. Gen. and Sp. Orch. 397; Hook. f. Fl. Tasm. ii. 25, t. 119; Reichb. f. Beitr. 25.

N. S. Wales. Port Jackson, *Bauer, Woolls,* and others; Blue Mountains, *Caley;* New England, *C. Stuart.*

Victoria. Wendu river, *Robertson;* Seeler's Cove, *F. Mueller;* Portarlington, *Robertson.*

Tasmania. Circular Head, *Gunn;* Cheshunt, *Archer;* Southport, *C. Stuart;* Swanport, *Story.*

S. Australia. Lofty Range, *F. Mueller.*

Some specimens from Port Phillip, *F. Mueller*, have very much reduced flowers, either with much enlarged or with very small bracts, all probably abnormal states.

4. **A. viridis,** *Hook. f. Fl. Tasm.* ii. 372. A small plant, the cordate leaf scarcely above ¼ in. diameter, above or rarely below the middle of the stem. Flowers 1 to 3, very nearly sessile, the bracts very small. Dorsal sepal erect, hood-shaped, much incurved, tapering at both ends as in *A. exsertus* but without any projecting point, 3 to 3½ lines long; lateral sepals about as long, linear, obtuse. Petals not 1 line long and very obtuse. Labellum 2 lines long, sessile, rhomboidal, concave, slightly undulate, possibly with 2 calli at the base but I could not clearly see them in the only flower I could examine. Column winged as in *Caladenia*. Pollen not seen.

Tasmania. Base of Mount Wellington, *Gunn, Oldfield.*

40. ERIOCHILUS, R. Br.

Dorsal sepal erect, slightly incurved and concave; petals nearly as long, usually narrower, erect or spreading; lateral sepals longer, spreading, oblong or elliptical, contracted into a distinct narrow stipes. Labellum much shorter, with a narrow concave erect claw, the margins often produced into small erect lateral lobes, the lamina or middle lobe recurved, very convex, entire, the surface villous, without calli. Column erect, the front angles sometimes ciliate or very narrowly winged. Anther erect, not mucronate, 2-celled, the outer valves large, folded over and concealing the small inner valves; pollen at length powdery or granular but much less so than in *Caladenia* and usually seen in 4 distinct and almost smooth masses in each cell, contracted at one end into points or short caudicles.—Terrestrial glandular-pubescent or hairy rarely glabrous herbs, with small underground tubers. Leaf solitary at the base of or higher up the stem, ovate or lanceolate. Flowers pink or white, 1 or more nearly sessile on a scape or peduncle, without empty bracts above the leaf, each flower subtended by a short loosely sheathing ovate bract.

The genus is limited to Australia. In all the flowers examined in which I have found the pollen-masses still in situ, their consistence has been much more solid and less granular than in any of the allied genera except *Acianthus*. F. Mueller, however, finds in the fresh state no difference between the pollen of *Eriochilus* and that of *Caladenia*.

Leaf at the base of the stem.

- Leaf broad. Stem glandular-pubescent. Labellum without lateral lobes, the middle lobe ovate-oblong. Eastern species . 1. *E. autumnalis.*
- Labellum with small erect lateral lobes, the middle lobe nearly orbicular. Western species.
  - Leaf broad. Stem villous . . . . . 2. *E. scaber.*
  - Leaf narrow. Stem glabrous . . . . . 3. *E. tenuis.*

Leaf some way up the stem. Plant nearly glabrous. Western species.

- Labellum middle-lobe ovate-oblong. Flowers rarely above 3 . 4. *E. dilatatus.*

Labellum middle-lobe narrow-oblong. Flowers usually more than 4 . . . . . 5. *E. multiflorus.*

1. **E. autumnalis,** *R. Br. Prod.* 323. A slender plant, rarely exceeding 6 in., more or less glandular-pubescent. Leaf radical, ovate, acute, usually dying away before the time of flowering, but occasionally still persisting at the base of some flowering specimens. Flowers pink, solitary or 2 or 3 rather distant, the subtending bracts loosely sheathing, 1 to 2 lines long, and no empty ones on the scape lower down. Dorsal sepal erect, slightly incurved, narrow-lanceolate, acute, scarcely contracted at the base, 3 to 3½ lines long; lateral sepals half as long again, very acute, elliptical-lanceolate, contracted into a distinct often slender stipes; petals rather shorter than the dorsal sepal, linear or linear-spathulate. Labellum about half as long as the lateral sepals, with an erect concave narrow claw, sometimes showing at the apex minute lateral lobes or angles, the lamina or middle lobe recurved, oval-oblong, convex and hairy but without prominent calli. Column shorter than the dorsal sepal, narrowly winged below the very broad concave stigma.—Lindl. Gen. and Sp. Orch. 427; Endl. Iconogr. t. 6; Hook. f. Fl. Tasm. ii. 26, t. 120 A; *Epipactis cucullata,* Labill. Pl. Nov. Holl. ii. 61, t. 211, f. 2; *Eriochilus cucullatus,* Reichb. f. Beitr. 27.

Queensland. Brisbane river, Moreton bay, *W. Hill* (with smaller flowers).
N. S. Wales. Port Jackson, *R. Brown* and others; frequent in the colony, *A. Cunningham;* New England, *Leichhardt, C. Stuart.*
Victoria. Wendu Vale, *Robertson;* Port Phillip, *R. Brown;* from the Yarra to Gipps' Land, *F. Mueller* and others.
Tasmania. Port Dalrymple, *R. Brown;* common in open and somewhat dry ground throughout the island, *J. D. Hooker.*
S. Australia. Near Mount Barker, *F. Mueller.*

2. **E. scaber,** *Lindl. Swan Riv. App.* 53, *Gen. and Sp. Orch.* 427. Closely allied to *E. autumnalis,* usually but not always shorter, not so slender, and hairy with articulate transparent hairs. Leaf radical, ovate or cordate, acute, usually persisting at the base of the flowering stem. Flowers 1 to 3, pink, the bracts broad and mostly acute. Sepals and petals rather shorter and broader than in *E. autumnalis,* but otherwise with the same proportions. Labellum-claw distinctly produced into small erect rounded lateral lobes, the lamina or middle lobe almost orbicular, very convex and densely hairy. Column not winged but the two angles ciliate as well as the outer valves of the anther. Pollen-masses distinct and almost contracted into caudicles as in *E. autumnalis.*—Endl. in Pl. Preiss. ii. 9.

W. Australia. Upper Hay river, *Miss Warburton;* Perongerup, *F. Mueller;* Swan river, *Drummond, 1st coll., Preiss, n.* 2207 (which I have not seen); Murchison river, *Oldfield.*

E. Lindleyi, Endl. in Pl. Preiss. ii. 10, from Swan river, *Preiss, n.* 2206, which I have not seen, is distinguished by the shortly pedunculate less erect flowers, but is probably only a slight variety of *E. scaber,* to which it is reduced by Reichb. f. Beitr. 62.

3. **E. tenuis,** *Lindl. Swan Riv. App.* 53, *Gen. and Sp. Orch.* 427. Stem glabrous, very slender, 3 to 6 in. high and single-flowered in all the

specimens seen. Leaf radical, but much narrower than in the two preceding species, lanceolate or oblong-lanceolate and almost obtuse. Bract small, acute. Flower of the size of those of *E. scaber*, but the sepals and petals not so broad, and the lateral lobes of the labellum scarcely prominent. Column ciliate on the angles as well as the valves of the anthers as in *E. scaber*.—Endl. in Pl. Preiss. ii. 10.

W. Australia. Swan river, *Drummond, 1st coll.*; King George's Sound, *Muir.*

4. **E. dilatatus,** *Lindl. Swan Riv. App.* 53, *Gen. and Sp. Orch.* 427. Stem glabrous or nearly so, usually rather above 6 in. Leaf at or below the middle but always far above the basal sheathing scale, linear-lanceolate in the typical form, sessile and stem-clasping. Flowers 1, 2 or rarely 3, resembling those of *E. autumnalis*. Dorsal sepal 3 to 3½ lines long, oblong in the upper part, contracted below the middle; lateral sepals oblong-lanceolate, acute, 5 lines long, contracted into a slender claw; petals about as long as the dorsal sepal but narrower. Labellum much shorter, the claw erect, with slightly prominent rounded lateral lobes, the lamina or middle lobe ovate-oblong, longer than broad, very convex and recurved, pubescent above. Column neither winged nor ciliate. Anther-valves pubescent outside, minutely ciliate on the edges.

W. Australia. Swan river, *Mangles;* Cape Leeuwin, *Collie;* Kalgan river and Dillon bay, *Maxwell.*

Var. *latifolius.* Rather larger; leaves lanceolate. Flowers 2 to 4 and rather longer. *E. latifolius*, Lindl. ll. cc.—Swan river, *Mangles.*

Var. *brevifolius.* Leaves smaller, ovate-lanceolate.—Swan river, *Drummond;* Murchison river, *Oldfield.*

5. **E. multiflorus**, *Lindl. Swan Riv. App.* 53, *Gen. and Sp. Orch.* 427. Glabrous or nearly so, closely resembling *E. dilatatus* and perhaps a variety, the habit and foliage the same, but usually rather taller, often 1 ft. high or more, the flowers more numerous and rather smaller, sometimes above 10 in the spike or raceme. Labellum with very small lateral lobes or teeth at the end of the claw, the lamina or middle lobe oblong, much longer than broad, and usually as long as the claw.—Endl. in Pl. Preiss. ii. 10.

W. Australia. Swan river, *Drummond, Preiss, n.* 2190; Forest Hill, *Muir.*

41. LYPERANTHUS, R. Br.

Dorsal sepal broad, concave, erect or incurved over the column; lateral sepals and petals narrow, erect or spreading, all nearly equal in length. Labellum shorter than the sepals, with a broad erect claw sometimes dilated upwards into small erect lateral lobes, the lamina or middle lobe ovate or lanceolate, recurved, the claw or disk between the lateral lobes longitudinally thickened in the centre, the surface of the lamina or middle lobe papillose. Column erect or incurved, not winged. Anther terminal, erect, 2-celled; pollen-masses granular.—Terrestrial herbs often drying black, with small underground tubers. Scapes or

stems 2- or more-flowered, either with one radical leaf and 2 or 3 almost leaf-like empty bracts, or with about 2 stem-leaves. Bracts usually rather large and leaf-like.

Reduced to the two following species, both of them endemic in Australia, the genus appears more naturally distinct from *Caladenia*, with which Reichenbach fil. proposes to unite it. It differs in the broader galeate upper sepal, the want of calli on the labellum, and the wingless column, and in habit the single empty bract of *Caladenia* is replaced by 2 or more leaves or somewhat leaf-like bracts. The *L. sauveolens* and *L. serrata* have however the narrow upper sepal, the calli on the labellum, and the winged column of *Caladenia*, and are correctly transferred to that genus. A New-Caledonian species and one from the Auckland islands require further examination to determine their affinities.

Leaf radical, ovate-cordate, with 2 or 3 empty sheathing-bracts.
Flowers 2 to 4. Labellum lamina fringed . . . . . 1. *L. nigricans.*
Leaves usually 2, ovate-elliptical or lanceolate. Flowers usually more than 4. Labellum lamina not fringed . . . . . 2. *L. ellipticus.*

1. **L. nigricans,** *R. Br. Prod.* 325. Stems from a few inches to nearly 1 ft. high, rather stout, the whole plant drying black. Radical leaf rather broadly ovate-cordate, 1 to 2 in. long and often nearly as broad, thick and fleshy; empty sheathing bracts usually 2 or 3 below the middle of the stem, loose and leaf-like but erect, obtuse, often 1 in. long. Flowers "pale purple," 2 to 4, rather distant, nearly sessile within acute or acuminate bracts usually longer than the ovary. Dorsal sepal broad, concave, much incurved, acuminate, 7 to 8 lines long; lateral sepals and petals spreading or deflexed, narrow-linear, as long as the dorsal sepal or the petals shorter. Labellum shorter, the claw erect or slightly recurved, channelled, dilated upwards into small erect lateral lobes, the middle lobe recurved or revolute with a deeply fringed margin; disk thickened between the lateral lobes into a more or less prominent broad longitudinal line, the surface of the middle lobe glandular-papillose. Column incurved, nearly attaining the lateral lobes, not winged, the circular peltate stigma very prominent.—Lindl. Gen. and Sp. Orch. 392; Endl. Iconogr. t. 7, and in Pl. Preiss. ii. 5; Hook. f. Fl. Tasm. ii. 16, t. 106 B; Reichb. f. Beitr. 33; *Caladenia nigricans*, Reichb. f. Beitr. 67; *Leptoceras pectinata*, Endl. in Pl. Preiss. ii. 6, not of Lindl.

N. S. Wales. Port Jackson, *R. Brown, A. Cunningham,* and others.
Victoria. Between Melbourne and Brighton, *F. Mueller;* Genoa Creek, *Walter.*
Tasmania. Forest near George Town, *Archer;* Rocky Cape, *Milligan.*
W. Australia. King George's Sound and adjoining districts, *Menzies, F. Mueller, Preiss, n.* 2200; Esperance bay and Cape Le Grand, *Maxwell;* Swan river, *Drummond, 1st coll.*; Darling range, *Preiss, n.* 2186.

This appears to be one of those species which, like some of our European terrestrial Orchideæ, have a wide geographical range, but are often very rare in each locality.

2. **L. ellipticus,** *R. Br. Prod.* 325. Stems erect or decumbent, 6 to 9 in. high, without any radical leaf, but usually with 2 narrow-ovate elliptical or lanceolate acute or acuminate leaves higher up, both very variable in size, 1 to 1½ in. long when broad, longer when narrow. Flowers more numerous and nearer together than in *L. nigricans*, green

with the labellum variegated white and red. Sepals and petals acuminate with fine points; the dorsal sepal 6 to 7 lines long, broadly lanceolate, incurved and concave; lateral sepals and petals rather shorter, linear or narrowly linear-lanceolate, flat, slightly falcate, spreading or recurved. Labellum above half as long as the sepals, with a short broad erect concave claw, the lateral lobes obsolete, the middle lobe or lamina recurved, veined, the margin entire, the surface with a few raised papillæ at its base. Column incurved, not winged.—Lindl. Gen. and Sp. Orch. 392; Reichb. f. Beitr. 33; F. Muell. Fragm. vii. 133; *Caladenia elliptica*, Reichb. f. Beitr. 67.

N. S. Wales. Port Jackson to the Blue Mountains, apparently rare, *Caley, A. Cunningham, Miss Atkinson, Daintree, Fitzgerald.*

42. BURNETTIA, Lindl.

Sepals and petals nearly equal, erect or connivent, the dorsal sepal incurved and concave, the lateral sepals and petals falcate. Labellum shorter than the sepals, sessile, undivided, erect at the base, recurved towards the end, with 2 longitudinal raised plates along the centre broken up into calli above the middle. Column erect, incurved, winged. Anther erect, 2-celled, the outer valves broad; pollen-masses granular.—Terrestrial herbs with small underground tubers, leafless at the time of flowering except empty sheathing scales. Leaf solitary at a different time of year. Flowers few.

The genus is limited to a single species endemic in Tasmania. It is very near *Caladenia*, with which Reichenbach f. proposes to unite it, but from which it differs in habit and in the longitudinal plates on the labellum, as well as in the consistence of the perianth and its more connivent segments.

1. **B. cuneata,** *Lind. Gen. and Sp. Orch.* 518. Flowering stems 2 to 4 in. high, with several sheathing empty scales, the lower ones short and imbricate, the upper ones distant, loose, often ½ in. long, obtuse or passing into the acute bracts subtending the pedicels. Leaf (which I have not seen) according to C. Stuart on a separate stem ovate-lanceolate, acute, ¾ in. long, disappearing some months before the flowering. Flowers 1 to 3, erect but much incurved. Sepals and petals about 5 lines long, of a thicker consistence than those of *Caladenia*, "reddish-brown outside pure white within" (C. Stuart). Labellum very broad, truncate or obscurely sinuate and sometimes slightly fringed, the longitudinal plates of the disk shortly lobed or broken up into a few calli above the middle and disappearing before the end of the lamina, and a few small calli sometimes scattered over the surface. Column-wings like those of *Caladenia.*—Hook. f. Fl. Tasm. ii. 17, t. 107; *Lyperanthus Burnettii*, F. Muell. Fragm. v. 96, vii. 134; *Caladenia cuneata*, Reichb. f. Beitr. 67.

Tasmania. Rocky Cape, *Gunn;* Woolnorth, Oyster Cove, Macquarrie Harbour; *Milligan;* Southport, *C. Stuart.*

43. CYRTOSTYLIS, R. Br.

Dorsal sepal linear or linear-lanceolate, erect and incurved, concave; lateral sepals and petals very narrow, spreading, nearly equal in length to the dorsal sepal, or the petals shorter. Labellum with a short claw, flat, undivided, entire, with 2 calli at the base produced into raised lines along the lamina. Column elongated, incurved, winged upwards. Anther terminal, erect, 2-celled; pollen-masses granular distinctly cohering in 4 masses.—Terrestrial glabrous herbs. Leaf solitary at the base of the stem, lamina broad and spreading. Scape without any empty bract, usually bearing a raceme of several flowers.

Besides the Australian species there are two in New Zealand. The genus is very near *Caladenia*, with which Reichenbach f. unites it. The habit is more that of *Acianthus*.

1. **C. reniformis,** *R. Br. Prod.* 322. A small delicate glabrous plant. Leaf orbicular-cordate or reniform, radical, sessile, the lamina varying from under ¾ to 1½ in. diameter. Scape from under 2 in. high and 1-flowered to 6 or 7 in. with 4 or 5 pale red flowers. Bracts subtending the pedicels short broad loose and truncate, or rarely acuminate. Dorsal sepal 4 to 5 lines long; lateral sepals and especially the petals often shorter and very narrow. Labellum nearly as long as the dorsal sepal, obtuse emarginate or with a short point, the medial raised lines terminating in the centre of the lamina or reaching nearly to the end. Column slender, ⅔ the length of the dorsal sepal, the wings sometimes very short under the anther, sometimes extending halfway down.—Lindl. Gen. and Sp. Orch. 398; Hook. f. Fl. Tasm. ii. 26, t. 119; Hook. Journ. Bot. i. t. 135; *Caladenia reniformis*, Reichb. f. Beitr. 67.

Queensland. Brisbane river, Moreton bay, *F. Mueller;* Rockhampton, *Thozet* (doubtful, the specimens too young to determine).

N. S. Wales. Port Jackson to the Blue Mountains, *R. Brown, Sieber, n.* 158, and many others; southward to Twofold bay, *F. Mueller.*

Victoria. Wendu Vale, *Robertson;* Portland, *Allitt;* Station Peak, *F. Mueller.*

Tasmania. Common in open and somewhat dry ground throughout the island, *J. D. Hooker.*

S. Australia. Encounter bay, Lofty Ranges, and other localities, *F. Mueller, Whittaker.*

Var. *Huegelii.* Bracts more acuminate and the labellum usually narrower. *C. Huegelii*, Endl. in Pl. Preiss. ii. 6.

W. Australia. King George's Sound, *Collie;* Vasse river, *Oldfield;* Upper Hay river, *Miss Clarke;* Swan river, *Drummond, 1st coll. n.* 862; Rottenest island, *Preiss, n.* 2204.

44. CALADENIA, R. Br.

Dorsal sepal erect or incurved over the column, usually narrow, lateral sepals nearly equal to it but flat and spreading, petals narrow, erect or spreading, or rarely sepals and petals all nearly equal and spreading. Labellum erect at the base, undivided or 3-lobed, the

lateral lobes when present erect, the middle lobe or upper part of the undivided labellum recurved, the margins often fringed or toothed, the disk with sessile or stipitate oblong linear or clavate calli, in 2 or more longitudinal rows, or irregularly crowded or scattered; in one species no calli but the margin fringed. Column erect or incurved, more or less 2-winged in the upper part. Anther erect, 2-celled, the outer valves broad, the inner much smaller, the connective usually produced into a point. Pollen-masses granular.—Terrestrial herbs, usually hairy, with small underground tubers. Leaf solitary, linear-lanceolate or oblong, from within a scarious sheathing scale close to the ground. Flowers solitary or very few in a loose raceme, on an erect scape, leafless except a small narrow sheathing scale or empty bract about the middle, and a similar bract under each pedicel, and in one species the radical leaf and empty bract are deficient. Flowers usually erect, variously coloured.

Besides the Australian species, which are all endemic, there are three from New Zealand, or two only, if we refer the *C. bifolia* to *Chiloglottis*. The genus is a difficult one, not only as to the determination of the limits to be assigned to species, especially from dried specimens, in which the precise form of the labellum can often not be ascertained, but the limitation of the genus itself is very arbitrary. We might almost equally well separate generically some of the following sections, especially *Leptoceras* and *Pentisia*, or with Reichenbach fil. add to them by the incorporation of *Glossodia*, and some others.

Sect. 1. **Leptoceras.**—*Sepals acute or rather obtuse, the dorsal one erect or incurved and concave. Petals erect, linear-clavate, longer than the sepals (not exceeding them in the other sections).*

Petals much longer than the sepals. Labellum not fringed, the disk with 2 to 4 rows of calli . . . . . 1. *C. Menziesii.*
Petals rather longer than the sepals. Labellum very broad, fringed at the end, the disk without calli . . . . . 2. *C. fimbriata.*

Sect. 2. **Phlebochilus.**—*Sepals obscurely or distinctly acuminate, the dorsal one incurved and concave, erect behind the column or reflexed with it. Labellum broad, with deeply coloured diverging veins, undivided or with a very small and obscure middle lobe.*

Sepals scarcely acuminate. Labellum on a short claw, not fringed; calli in 2 rows, the lower ones linear-clavate, the upper depressed . . . . . 3. *C. Cairnsiana.*
Sepals shortly acuminate. Labellum on a long claw, not fringed; calli few long and clavate, the lower ones connate . 4. *C. multiclavia.*
Sepals subulate-acuminate, all reflexed as well as the column. Labellum on a short claw, fringed; calli short, thick, and irregularly crowded . . . . . 5. *C. discoidea.*

Sect. 3. **Calonema.**—*Sepals acuminate, with long or short points, the dorsal one erect and incurved. Labellum inconspicuously veined, the disk with 2 or more rows of calli.*

Sepal-points usually long. Lateral lobes of the labellum fringed or toothed, sometimes passing into the middle lobe.
Leaf narrow-linear. Calli of the labellum in 2 rows . . . 6. *C. filamentosa.*
Leaf linear-lanceolate. Calli of the labellum in 4 to 6 rows . 7. *C. Patersoni.*
Sepal-points usually long. Lateral lobes of the labellum very prominent and entire; calli in 4 to 6 rows.
Leaf narrow-linear. Eastern species . . . . . 8. *C. clavigera.*

Leaf ovate-lanceolate. Western species . . . . . 9. *C. Drummondii.*
Sepal-points usually short.
Leaf oblong or lanceolate. Labellum sessile, broad, undivided, fringed with 4 to 6 irregular rows of calli . . . . . 10. *C. hirta.*
Leaf narrow-linear. Labellum on a distinct claw, the lateral lobes broadly rounded; one long clavate callus at the top of the claw, and small crowded sessile ones along the centre of the disk . . . . . 11. *C. Roei.*
Leaf narrow-oblong or lanceolate. Labellum on a long claw, the lateral lobes narrow falcate; one long clavate callus at the top of the claw, and 2 shorter linear ones, and 2 lines of small ones on the middle lobe . . . . . 12. *C. Barbarossæ.*

Sect. 4. **Eucaladenia.**—*Sepals acute or obscurely acuminate, rarely obtuse, the dorsal one usually erect and concave. Labellum inconspicuously veined, the disk with 2 or more rows of calli (sometimes arranged or united at the base almost in a semicircle).*

Flowers large, yellow. Labellum broadly cordate, 3-lobed, the long calli almost in a semicircle . . . . . 13. *C. flava.*
Flowers pink or white.
Leaf oblong or lanceolate. Labellum deeply 3-lobed, the long calli in 2 short rows, more or less converging in a semicircle.
Calli all free . . . . . 14. *C. latifolia.*
Calli more or less united . . . . . 15. *C. reptans.*
Leaf very long. Labellum with the lateral lobes small, the calli short and thick in 2 rows, the rest of the disk covered with papillæ or small calli.
Sepals and petals $\frac{3}{4}$ in. or more. Middle lobe of the labellum entire . . . . . 16. *C. suaveolens.*
Sepals and petals little more than $\frac{1}{2}$ in. Middle lobe of the labellum usually toothed . . . . . 17. *C. serrata.*
Leaf narrow-linear. Labellum with the lateral lobes broad and obtuse.
Sepals and petals lanceolate, usually 6 to 8 lines long. Calli of the labellum in 2 rarely in 4 rows . . . . . 18. *C. carnea.*
Sepals and petals narrow, much contracted at the base, usually under 6 lines long. Calli of the labellum much crowded in irregular rows . . . . . 19. *C. testacea.*
Leaf narrow-linear. Labellum with the lateral lobes falcate, almost acute; calli short, densely crowded . . . . . 20. *C. congesta.*
Leaf none on the flowering stem. Labellum with the lateral lobes falcate, almost acute; calli linear-clavate, in 2 rows . 21. *C. aphylla.*
Flowers blue.
Leaf usually linear, glabrous or slightly hairy.
Labellum broadly sessile, lateral lobes broad and obtuse, middle lobe lanceolate; calli in 2 rows.
Leaf lanceolate-linear. Eastern species . . . . . 22. *C. cærulea.*
Leaf narrow-linear. Western species . . . . . 23. *C. saccharata.*
Labellum with a long linear-cuneate claw, lamina ovate, obscurely lobed; calli numerous and crowded . . . . . 24. *C. deformis.*
Leaf lanceolate, silky-pubescent. Flowers large. Labellum cuneate, equally 3-lobed; calli in about 4 rows . . . . 25. *C. sericea.*

Sect. 5. **Pentisia.**—*Sepals and petals obtuse and nearly equal and all spreading. Labellum and column very short; calli small and numerous in longitudinal rows.*

Flowers blue. Labellum broadly ovate, undivided . . . . 26. *C. gemmata.*
Flowers (yellow?). Labellum broadly ovate, almost acuminate, obscurely 3-lobed . . . . . 27. *C. ixioides.*

Sect. 1. Leptoceras, *R. Br.*—Sepals acute or rather obtuse, the dorsal one erect, or incurved and concave, the lateral ones spreading. Petals erect, narrow, linear-clavate, longer than the sepals.

1. **C. Menziesii,** *R. Br. Prod.* 325. Stems slender, glabrous or slightly hairy, usually 6 to 9 in. high. Leaf ovate-lanceolate or oblong-lanceolate, 1 to 2 in. long. Flowers 1 or 2, on long pedicels. Sepals lanceolate, acute, 4 to 5 lines long, the dorsal one concave and incurved, the lateral ones falcate, slightly spreading. Petals much longer than the sepals, erect, narrow-linear, sometimes almost filiform but clavate towards the end, giving the flower a 2-horned aspect. Labellum shorter than the sepals, undivided, ovate-oblong broadly ovate obovate or almost orbicular, erect at the base, recurved towards the end, entire emarginate or produced into a broad obtuse point; calli shortly linear-clavate, more or less distinctly arranged in 2 or 4 rows. Column rather broadly winged.—Hook. f. Fl. Tasm. ii. 27, t. 121 A; *Leptoceras Menziesii*, Lindl. Gen. and Sp. Orch. 416; Endl. in Pl. Preiss. ii. 6; *Caladenia macrophylla*, R. Br. Prod. 325; *Leptoceras macrophylla*, Lindl. l.c.; *L. oblonga*, Lindl. Swan Riv. App. 53, Gen. and Sp. Orch. 416; Endl. in Pl. Preiss. ii. 6.

Victoria. Portland, *Allitt;* Wendu river, *Robertson;* Bunip Creek, *F. Mueller.*
S. Australia. Guichen bay, *F. Mueller.*
W. Australia. King George's Sound and adjoining districts, *Menzies, Oldfield, Preiss, n.*2213, and several others; Swan river, *Oldfield, Preiss, n.* 2212; also *Drummond, n.* 359.

Brown distinguished two species, *C. Menziesii*, with short leaves and two rows of calli to the labellum, and *C. macrophylla*, with long leaves and four rows of calli. Lindley also distinguished a second species with 4 rows of calli, but differently characterized as to leaves, and also as to the shape of the calli; but the 2 or 4 rows do not appear to me to be at all accompanied by any constant difference in the foliage, in the shape of the calli, or in any other respect.

2. **C. fimbriata,** *Reichb. f. Beitr.* 65. Glabrous or nearly so, 6 in. to 1 ft. high. Leaf sometimes very small and rarely above 1 in. long, ovate-lanceolate or oblong. Flowers usually 2 or 3, rather distant on erect pedicels of $\frac{1}{2}$ to $\frac{3}{4}$ in. Dorsal sepal oblong-lanceolate, acuminate, concave, erect, about 4 lines long; lateral sepals about as long, lanceolate, acuminate, spreading or reflexed; petals erect, linear-clavate, longer than the sepals but not nearly so long as in *C. Menziesii*. Labellum half as long as the sepals and broader than long, truncate and fringed at the broad end, consisting of the very broad lateral lobes, with a very small short and broad middle lobe, either entire or slightly fringed or toothed, the disk without any calli.—*Leptoceras fimbriata* and *L. pectinata*, Lindl. Swan Riv. App. 53; Gen. and Sp. Orch. 416.

W. Australia. Swan river, *Drummond, 1st coll. n.* 856.—This is the only species without calli on the labellum, but it is evidently too closely allied to *C. Menziesii* to be generically separated from it.

Sect. 2. Phlebochilus.—Sepals obscurely or distinctly acuminate, the dorsal one incurved and concave, erect behind the column or reflexed with it. Labellum broad, with deeply coloured diverging simple

or forked veins undivided (consisting entirely of the lateral lobes) or with a very small and obscure middle lobe.

3. **C. Cairnsiana,** *F. Muell. Fragm.* vii. 31. Stems hairy, rather slender, about 6 in. high in the specimens seen. Leaf linear. Flower solitary. Sepals and petals narrow linear, about 5 lines long, not produced into points, pink with dark purple lines. Labellum about as long as the sepals, on a very short claw, broadly ovate, consisting chiefly of the broad large lateral lobes elegantly marked with deep purple diverging simple or forked veins, the middle lobe very short, semi-orbicular, or sometimes obsolete, the margins entire, the calli crowded in 2 rows, those on the claw and at the base of the lobes linear-clavate, those between the lobes thick and depressed. Column narrow and much curved at the base, broadly winged upwards.

W. Australia. North of Stirling Range, *F. Mueller.*

4. **C. multiclavia,** *Reichb. f. Beitr.* 64. A hairy species of 6 in. to 1 ft. resembling some forms of *C. Patersoni.* Leaf linear-lanceolate. Sepals and petals lanceolate striate and spreading for about ½ in. then tapering into a long fine point, the dorsal sepal sometimes linear from the base and usually spreading or reflexed with the column. Labellum contracted into a long narrow claw almost appressed to and as it were lying over the column, the lamina spreading, broadly ovate-rhomboidal, marked with deep-coloured diverging veins, the margin entire; calli on the claw few, linear-clavate, the lower ones connate into a thick plate, multipapulose on the apex, and a number of small calli or papillæ crowded at the base of the lamina. Column about as long as the dilated part of the sepals, slender at the base, winged in the upper half, the wings produced, in the typical form, into oblong lobes.

W. Australia, *Drummond, n.* 441.—Reichenbach fil. refers here also Drummond's n. 440, which, however, in Herb. Lindl. represents a form of *C. Patersoni.*

Var. *brevicuspis.* Points of the sepals much shorter, the dorsal sepal very narrow, and the petals less dilated than in the typical form, the calli at the base of the labellum free or nearly so, long and clavate.—W. Australia, *Drummond.*

5. **C. discoidea,** *Lindl. Swan Riv. App.* 52; *Gen. and Sp. Orch.* 423. Usually very hairy and sometimes above 1 ft. high. Leaf broadly linear or lanceolate, usually long and sometimes above 6 in. Flowers often 2 or 3 on the stems. Sepals 6 to 7 lines long, shortly and acutely acuminate, the dorsal one narrow erect incurved and concave, the lateral ones lanceolate, somewhat falcate, spreading; petals rather longer and narrower. Labellum not much shorter than the sepals, broadly ovate or orbicular, undivided, marked with deep-coloured diverging forked veins and fringed with rather long cilia, very shortly contracted at the base; calli irregularly crowded along or near the centre, thick, obovoid or oblong, the lower ones often longer and clavate. Column narrow and incurved at the base, broadly winged in the upper half.—Endl. in Pl. Preiss. ii. 9 ?

W. Australia. Swan river, *Drummond, 1st coll.*—I have not seen Preiss's specimens.

Sect. 3. Calonema.—Sepals acuminate, with long or short points, the dorsal one erect incurved and concave. Labellum inconspicuously veined, the middle lobe developed, the lateral lobes sometimes broad and distinct sometimes obsolete, making the whole labellum to appear undivided; the disk with calli more or less distinctly arranged in 2 or more longitudinal rows.

6. **C. filamentosa,** *R. Br. Prod.* 324. Stature and inflorescence of the typical *C. Patersoni* and very nearly allied to it. Leaf narrow-linear. Sepals with the long points of *C. Patersoni*, but usually rather narrower and in the typical form apparently of a uniform red colour. Labellum as in that form tapering into the dark middle lobe and the margins more or less fringed but usually smaller and narrower, the calli varying in thickness but always in 2 rows only along the disk.—Hook. f. Fl. Tasm. ii. 27, t. 121 B; Reichb. f. Beitr. 31; *C. filifera*, Lindl. Swan Riv. App. 52, Gen. and Sp. Orch. 421; Endl. in Pl. Preiss. ii. 8; Field Sert. Pl. t. 73; *C. denticulata*, Lindl. ll.cc.; Endl. in Pl. Preiss. ii. 9.

N. S. Wales. Mudgee, *Woolls.*
Tasmania. Port Dalrymple, *Paterson, R. Brown;* George Town, *Archer;* Southport, *C. Stuart.*
S. Australia. Rivoli bay, *F. Mueller.*
W. Australia. King George's Sound and adjoining districts, *F. Mueller, Muir,* and others; Swan river, *Drummond, 1st coll.*

Var. *pallens.* Flowers apparently pink, the points of the sepals not so long nor so fine as in the ordinary *C. filamentosa.*—Swan river, *Drummond, n.* 442, *Mylne.*

The *C. filamentosa* may be, as suggested by F. Mueller, one of the numerous forms of *C. Patersoni*, chiefly prevalent in W. Australia, but the apparently constant reduction of the calli to 2 rows is accompanied by a difference in foliage which may justify its retention as a species, subject, however, to further investigation of living specimens.

7. **C. Patersoni,** *R. Br. Prod.* 324. More or less hairy and from under 1 ft. to near 2 ft. high, the upper portion and flowers often minutely glandular-pubescent. Leaf oblong-linear or lanceolate, 2 or more inches long. Flowers 1, 2 or very rarely 3, the bracts subtending the pedicels small and linear. Sepals more or less dilated in the lower part, tapering into a long point sometimes dilated again towards the end, the whole length varying from 1 in. to above 2 in., the points or the whole sepal usually glandular-pubescent. Petals shorter and not dilated at the base or rarely as long as the sepals. Labellum rarely half as long as the sepals, broadly ovate or ovate-lanceolate and undivided or dilated into broad lateral lobes, the margins more or less fringed ciliate or crenate, the end or middle lobe recurved; calli numerous, linear or clavate, more or less distinctly arranged in 4 or more longitudinal rows. Column as long as the erect portion of the labellum, shortly winged at the apex; anther-point usually prominent.—Lindl. Gen. and Sp. Orch. 422; Reichb. f. Beitr. 31; *C. pulcherrima*, F. Muell. Fragm. v. 93, 101.

Very variable in the length and proportions of the sepals, in the shape of the labellum and its fringes and calli, and in the colour of the flowers, which are usually of a pale greenish hue outside and yellowish or pink inside, the calli and end or middle lobe of the labellum usually and sometimes the whole disk of a rich purple. The

following are the principal forms this species assumes, regarded by Lindley and others as distinct species, but passing too gradually into each other to be clearly marked out from dried specimens.

Var. *dilatata.* Labellum with broad lateral usually pale-coloured deeply fringed lobes, the middle lobe ovate, dark-coloured; calli very numerous in several rows. Sepal points very long, especially in the Western specimens. *C. dilatata*, R. Br. Prod. 325; Lindl. Gen. and Sp. Orch. 422; Hook. f. Fl. Tasm. ii. 27, t. 122 B; Reichb. f., Beitr. 32; *C. filamentosa*, Lindl. l.c. 421, not of R. Br.; *C. longicauda*, Lindl. Swan Riv. App. 52, t. 8 A; Gen. and Sp Orch. 422; Endl. in Pl. Preiss. ii. 9.

N. S. Wales. Port Jackson and Blue Mountains, *Woolls;* New England, *C. Stuart.*

Victoria. Melbourne and Yarra Yarra, *Adamson, Walter;* from the Grampians to Gipps' Land, *F. Mueller*, and others.

Tasmania. Circular Head, *Gunn;* forest lands near Cheshunt, *Archer.*

S. Australia. Bugle Range, *F. Mueller.*

W. Australia. King George's Sound to Vasse and Swan rivers, *Drummond*, 1*st coll.*, also *n.* 129, 439, 440, *Preiss, n.* 2217, *Oldfield*, and many others.—Apparently a common Western species, known by the name of "Spider Orchis," and usually with remarkably long points to the sepals, and the lateral lobes of the labellum large, broad, and much fringed.

Var. *typica.* Labellum usually ovate with fringed margins gradually tapering into the broad recurved crenulate undulate or shortly fringed apex or middle lobe, the lateral lobes but little prominent or quite obsolete. Calli of the disk very prominent or linear, distinctly arranged in 4 or 6 rows. Such at least are the usual characters; but the precise shape of the labellum, the prominence of the lateral lobes, the fringes of its margin, the number of calli, their shape usually longer more clavate or more slender towards the base of the disk, more depressed towards the end, the rows regular and distinct or crowded and confused towards the central line, vary often from specimen to specimen, and in a large proportion of the very numerous specimens I have had before me, the precise shape and arrangement of these calli cannot be well ascertained in their dried state. The whole species, and the allied *C. filamentosa* and *C. clavigera* included in it by F. Mueller, require critically working up in their native country, where alone it can be ascertained how far hybridism may have contributed to the confusion of different species or subspecies.—Hook. f. Fl. Tasm. ii. 28, t. 123 A.

N. S. Wales. Bathurst, *Woolls;* Murrumbidgee river, *F. Mueller.*

Victoria. Grampians, *F. Mueller;* Burra-Burra, *Hinteracker.*

Tasmania. Port Dalrymple, *Paterson* (*R. Brown*); abundant throughout the island, *J. D. Hooker.*

S. Australia. Several specimens from the neighbourhood of St. Vincent's Gulf, *F. Mueller*, and others, belong to this form.

C. pallida, Lindl. Gen. and Sp. Orch. 421, Hook. f. Fl. Tasm. ii. 28, from Circular Head, *Gunn*, is a slight variety of *C. Patersoni*, with a paler less fringed labellum. *C. Behrii* and *C. tentaculata*, Schlecht. in Linnæa, xx. 569 and 571, would appear, from the descriptions given, to be among the innumerable forms assumed by this species.

8. **C. clavigera,** *A. Cunn.; Lindl. Gen. and Sp. Orch.* 422. Stature hairiness and oblong-linear or lanceolate leaf of *C. Patersoni*, of which this is considered by F. Mueller to be a variety. Sepals usually about 1 in. long, lanceolate at the base with long fine points usually but not always clavate at the end; petals shorter and not clavate. Labellum under ½ in. long, the broad yellow lateral lobes quite entire, the purple middle lobe either entire or slightly crenate towards the base; calli in about 4 rows as in *C. Patersoni.*—Hook. f. Fl. Tasm. ii. 28, t. 222 A.

N. S. Wales. Near Bathurst, *A. Cunningham.*

Victoria. Ballarat, *Glendinning;* Malden, *Mrs. Nott.*

Tasmania. Circular Head, *Gunn;* Tamar river, *Archer;* Flinders island, *Milligan.*

9. **C. Drummondii,** *Benth.* Our specimens small, the leaf broader for its length than in any other species of *Caladenia*, ovate-lanceolate, ½ in. long and ¼ in. broad, but not yet fully developed. Flower solitary on a hairy scape of 2 to 3 in., without any empty bract but a long closely sheathing one subtending the terminal pedicel. Sepals and petals nearly of *C. hirta*, about ½ in. long, including the point which is shorter than or about as long as the dilated part, dark-coloured with the dilated margin whitish. Labellum nearly of *C. clavigera*, closely sessile, the lateral lobes broadly rounded, apparently white and entire, the middle lobe broadly oblong-lanceolate, recurved; calli acute, in about 4 rows. Column shortly and broadly winged under the anther, the connective apparently without any point.

W. Australia. Swan river, *Drummond.*—Without much of character in the flower, this species differs from the whole genus in the shape of its leaf. It is only known however from two specimens of Drummond's in Herb. Hooker.

10. **C. hirta,** *Lindl. Swan Riv. App.* 52; *Gen. and Sp. Orch.* 421. Very hairy and often above 1 ft. high, the root more creeping than in most species. Leaf oblong or lanceolate, 2 to 4 in. long. Flowers 2 or 3, more or less pink. Sepals and petals ¾ to 1 in. long, irregularly acuminate, but the points much shorter than in *C. Patersoni*, and always shorter than the dilated portion. Labellum at least half as long as the sepals, ovate-oblong or ovate-lanceolate, obtuse, undivided but more or less fringed from the middle upwards, contracted and erect at the base, recurved towards the end; calli linear, more or less regularly placed in 4 to 6 rows. Column winged upwards. Anther with a prominent point.—Endl. in Pl. Preiss. ii. 9; *C. mollis*, Endl. l.c. 8, according to Reichb. f.

W. Australia. Swan river, *Drummond, 1st coll.*; Toodyay and Kalgan river, *Oldfield;* Stirling range, *F. Mueller:* West Mount Barren and Salt river, *Maxwell;* also *Preiss, n.* 2213 *and* 2218 (*Reichb. f.*).

11. **C. Roei,** *Benth.* Hairy, 6 to 8 in. high. Leaf narrow-linear, the empty bract on the stem 3 to 5 lines long and almost leaf-like. Flower solitary from a sheathing bract of 4 or 5 lines. Sepals and petals 6 to 7 lines long including the points which are much shorter than the dilated part. Labellum with a distinct unwinged claw of about 1 line, the lateral lobes very large and broad, light-coloured, not fringed, the whole labellum expanding to a breadth of nearly ½ in., the middle lobe much smaller, recurved dark-coloured and denticulate or fringed with short calli; one large long callus between the lateral lobes at the top of the claw, and small obtuse calli compactly crowded along the central line. Column long, incurved, broadly and shortly winged under the anther.

W. Australia, *Roe.*—Only seen in Herb. Hook. Allied to *C. Barbarossæ*, but differing in foliage and very much in the labellum.

12. **C. Barbarossæ,** *Reichb. f. Beitr.* 64. Stem hairy, 6 to 10 in. high. Leaf lanceolate or oblong-linear, attaining about 2 in. Flower solitary from a loosely sheathing bract. Sepals and petals 6 to 8 lines

long, linear or linear-lanceolate, produced into a short point, of a pale colour with a dark central line. Labellum with an unwinged channelled claw of about 2 lines, the lateral lobes linear-falcate and erect, the middle lobe twice as long, broadly oblong, recurved, the margin fringed, the disk with 2 curved lines fringed with small calli, a long erect clavate callus dilated or 2-horned at the end at the top of the claw between the lateral lobes, and on each side of it a smaller pubescent linear or oblong callus. Column winged from the middle upwards. Anther without any point.

W. Australia. Swan river, *Drummond, 1st coll.* (n. 861, according to Reichb. f.). —Although the conspicuous callus on the labellum of this species and of *C. Roei* is much like the appendage of *Glossodia*, its position with regard to the labellum and column is very different, and does not necessarily require the union of the two genera.

Sect. 4. Eucaladenia.—Sepals acute or obscurely acuminate, rarely obtuse, not produced into a distinct point, the dorsal one usually erect and concave but sometimes not very different from the others. Labellum inconspicuously veined; calli sometimes in 2 rows either parallel or short and almost joining in a semicircle, sometimes irregularly arranged in 2 to 4 rows or crowded along the centre.

13. **C. flava,** *R. Br. Prod.* 324. Hairy, more glandular than most species and usually low, rarely attaining 1 ft., the underground stems very woolly and knotty. Leaf lanceolate, rather large for the plant. Flowers large, yellow, usually 2 to 4 or even 5 on a flexuose rhachis. Sepals and petals broadly lanceolate, rather acute or almost acuminate, contracted at the base, the lateral sepals often above 1 in. long, with a somewhat darker middle line; dorsal sepal rather smaller, less yellow with a more or less distinct reddish line or red blotches along the centre. Petals still shorter, pale yellow or whitish and more red in the centre. Labellum 3 to 4 lines long and broad, with a very short broad concave claw, the broad lamina cordate at the base, deeply 3-lobed, the lateral lobes ovate, shortly acuminate, the middle lobe rather longer and lanceolate, bordered on each side by 2 or 3 long linear-clavate calli; calli of the disk linear-clavate, in 2 rows almost converging into a semicircle. Column winged from the base. Anther with a long point.—Lindl. Gen. and Sp. Orch. 418; Endl. in Pl. Preiss. ii. 7; F. Muell. Fragm. vi. 83; Reichb. f. Beitr. 29.

W. Australia. King George's Sound and adjoining districts, *Menzies, F. Mueller,* and many others, and thence to Swan river, *Drummond, 1st coll. n.* 827, *Preiss, n.* 2209.

14. **C. latifolia,** *R. Br. Prod.* 324. Hairy, from ½ to 1 ft. high. Leaf oblong-lanceolate, 1½ to 4 in. long. Flowers pink or rarely white, usually 2 or 3, rather distant, on short pedicels. Lateral sepals varying in different specimens from 6 to 11 lines long, oblong-lanceolate, obtuse or scarcely acute, the dorsal sepal rather shorter and more acute, the petals somewhat shorter and more lanceolate. Labellum not ⅓ the length of the sepals, shortly cuneate at the base, deeply 3-lobed, the lateral lobes oblong obtuse and entire, the middle lobe longer, ovate or

broadly lanceolate, fringed near the base with a few marginal calli, the calli of the disk linear-clavate, rather long, in 2 short converging rows, sometimes almost forming a semicircle, sometimes rather longer and more parallel. Column shortly and rather broadly winged at the apex. Anthers with a long point.—Lindl. Gen. and Sp. Orch. 419; Reichb. f. Beitr. 30, 64; Hook. f. Fl. Tasm. ii. 28; *C. mollis*, Lindl. Swan Riv. App. 51; Gen. and Sp. Orch. 419; *C. elongata*, Lindl. Swan Riv. App. 52; Gen. and Sp. Orch. 419.

N. S. Wales. Cape Howe, *F. Mueller.*
Victoria. Wendu Vale, *Robertson;* Melbourne, *Adamson;* Mount William, *F. Mueller;* Little river, *Fullagar.*
Tasmania. Port Dalrymple, *R. Brown;* Woolnorth, Circular Head, and Georgetown, *Gunn;* Hobarton, *Archer.*
S. Australia. St. Vincent's Gulf and neighbouring mountains, *F. Mueller* and others.
W. Australia (usually with rather larger flowers). King George's Sound, *F. Mueller* and others; Swan river, *Drummond, 1st coll. n.* 838; *Preiss, n.* 2184, *Oldfield.*

Var. *angustifolia.* Leaves almost linear.—Upper Hay river, *Miss Warburton;* Lake Muir, *Muir.*

C. marginata, Lindl. Swan Riv. App. 51, Gen. and Sp. Orch. 419, from King George's Sound, is, I think, a variety of *C. latifolia*, with the calli shorter, more numerous, in 2 longer rows. *C. ochreata*, Lindl. ll. cc., from Swan river, *Drummond, 1st coll.*, is a similar variety, with the middle lobe crenulate only, not prominently fringed. *C. marginata* and *C. ochreata* of Endl. Pl. Preiss. ii. 8, are referred by Reichenbach f. to the typical *C. latifolia.*

15. **C. reptans,** *Lindl. Swan Riv. App.* 52; *Gen. and Sp. Orch.* 419. A small 1-flowered species, with apparently a creeping underground stem, in other respects closely resembling *C. latifolia*, of which it is perhaps a variety. Leaf oblong or lanceolate. Sepals and petals of *C. latifolia* or rather more obtuse; labellum contracted into a longer claw, deeply 3-lobed, the middle lobe not fringed, the calli of the disk long and thick, more or less united at the base into 2 deeply-lobed laminæ, forming 2 short converging rows placed in a semicircle or almost transverse.

W. Australia. Swan river, *Drummond, 1st coll.*—Reichenbach fil. Beitr. 64, refers also to this species *C. Preissii* and *C. nana*, Endl. in Pl. Preiss. ii. 7.

16. **C. suaveolens,** *Reichb. f. Beitr.* 67. Glabrous and usually 1 ft. high or rather more. Leaf linear or linear-lanceolate, 6 to 8 in. long, and often 2 or 3 empty sheathing scales on the stem. Flowers 2 to 6, rather distant, almost sessile within sheathing bracts of $\frac{1}{2}$ to $\frac{3}{4}$ in. Dorsal sepal lanceolate, acuminate, incurved, concave, $\frac{3}{4}$ to nearly 1 in. long; lateral sepals and petals nearly as long, linear, spreading or recurved. Labellum not half so long as the sepals, the erect part broad with the erect lateral lobes rounded and not very prominent, the middle lobe ovate-oblong, obtuse, recurved; calli in 2 rows along the claw or erect part and between the lateral lobes, sometimes almost confluent, the remainder of the disk almost covered with smaller calli or papillæ more or less arranged in several rows. Column broadly winged. Anther

with a prominent point.—*Lyperanthus suaveolens*, R. Br. Prod. 325; Lindl. Gen. and Sp. Orch. 392; F. Muell. Fragm. v. 98; Reichb. f. Beitr. 32; *Caladenia sulphurea*, A. Cunn. in Field, N. S. Wales, 361. *Leptoceras sulphurea*, Lindl. Gen. and Sp. Orch. 416.

N. S. Wales. Port Jackson to the Blue Mountains, *R. Brown*, *Woolls*, *A. Cunningham*, and others; New England, *C. Stuart*.
Victoria. East Gipps' Land, *Walter*.
Tasmania. Dentrecastreaux Channel, *Milligan*.

17. **C. serrata,** *Reichb. f. Beitr.* 67. Nearly resembles *C. suaveolens* in habit and foliage, but usually a stouter and taller plant. Leaf broadly linear, often above 1 ft. long. Flowers 4 to 6, "greenish outside purplish pink inside, the labellum yellowish towards the tip." Bracts above 1 in. long, finely acuminate. Sepals shortly acuminate, the dorsal one lanceolate, incurved, concave, 6 to 7 lines long; the lateral sepals and petals narrower and rather longer. Labellum more than half as long, the lateral lobes erect as in *C. suaveolens*, but rather broader, the middle lobe more lanceolate, the margins usually undulate crisped or shortly fringed; calli linear, in 2 rows along the centre, and smaller ones in several rows on the remainder of the disk. Column winged. Anther acuminate.—*Lyperanthus serratus*, Lindl. Gen. and Sp. Orch. 393; Endl. in Pl. Preiss. ii. 6.

W. Australia. Swan river, *Drummond*, 1*st coll.*; Cape Leschenault, *Oldfield*; King George's Sound, *Muir*; near Wulgenup, *Preiss*, *n.* 2189, *F. Mueller*.

18. **C. carnea,** *R. Br. Prod.* 324. Slender, usually under 1 ft. high, sparingly hairy or nearly glabrous or glandular papillose. Leaf narrow-linear, often long. Flowers 1 to 3, pink in the typical form, often longitudinally veined and usually with transverse bands of a darker hue on the labellum and column. Sepals 6 to 8 lines long, or in some varieties rather smaller, lanceolate, acute, the dorsal sepal erect and as well as the petals rather smaller than the lateral ones. Labellum not above half as long as the lateral sepals, the lateral lobes broad obtuse and prominent, the middle lobe lanceolate, recurved, fringed with a few linear calli; calli of the disk linear in 2 rows in the typical form. Column narrowly winged.—Lindl. Gen. and Sp. Orch. 417; Endl. Iconogr. t. 51; Hook. f. Fl. Tasm. ii. 29, t. 124 A; Reichb. f. Beitr. 28; *Arethusa catenata*, Sm. Exot. Bot. t. 104; *C. alata*, R. Br. Prod. 324 (with smaller flowers); Lindl. Gen. and Sp. Orch. 418; Hook. f. Fl. Tasm. ii. 30, t. 125; Reichb. f. Beitr. 29; *C. angustata*, Hook. f. l.c.

Queensland. Keppel and Shoalwater bays, *R. Brown*; from Brisbane to Wide bay in great abundance, *Leichhardt*, *F. Mueller*, and others; Rockhampton, *O'Shanesy*; Nerkool Creek, *Bowman*; Darling Downs, *Law*; Mount Elliott, *Fitzalan*.
N. S. Wales. Port Jackson to the Blue Mountains, *R. Brown* and many others; northward to Richmond river, *Henderson*; New England, *C. Stuart*; southward to Twofold bay, *F. Mueller*.
Victoria. From the Glenelg to Gipps' Land, *F. Mueller*, *Robertson*, and others.
Tasmania. Abundant throughout the island, *J. D. Hooker* and others.
S. Australia. From the Glenelg to St. Vincent's Gulf, numerous localities, *F. Mueller* and others; Kangaroo island, *Waterhouse*.

Var. *alba*. Flowers white. I can see no other difference. *C. alba*, R. Br. Prod. 323; Lindl. Gen. and Sp. Orch. 417; Reichb. f. Beitr. 28.—Port Jackson, *R. Brown*, *Woolls*, *A. Cunningham*, and a few of the southern specimens.

Var. *quadriseriata*. Labellum with 4 rows of calli; flowers pink.—Between Rivoli bay and Mount Gambier, *F. Mueller*; Southport, Tasmania, *C. Stuart*.

19. **C. testacea**, *R. Br. Prod.* 324. A slender plant with narrow linear leaves, very much resembling the smaller specimens of *C. carnea*, and united with that species by F. Mueller. Sepals and petals narrower and more contracted at the base. Labellum with the lateral lobes less prominent and more fringed, the calli of the disk numerous, much crowded in about 4 rows, the lower ones mostly stipitate or oblong-clavate, the upper ones very dense and depressed.—Lindl. Gen. and Sp. Orch. 420; Reichb. f. Beitr. 30; *C. gracilis*, R. Br. l.c.; Reichb. f. l.c.; Lindl. l.c. 423; *C. angustata*, Lindl. l.c. 420.

N. S. Wales. Port Jackson to the Blue Mountains, *R. Brown*, *A. Cunningham*, *Woolls*, and others.
Victoria. Port Phillip, *Gunn*.
Tasmania. Port Dalrymple, *R. Brown*; Southport, *C. Stuart*.

20. **C. congesta**, *R. Br. Prod.* 324. A slender glandular-pubescent or nearly glabrous species, allied to *C. carnea* but easily distinguished by the labellum. Stems 9 in. to 1 ft. high. Leaf narrow-linear. Flowers 1 or 2, pink. Sepals and petals narrow-lanceolate, acute, ½ to ¾ in. long, the dorsal sepal erect incurved and concave. Labellum fully half as long as the sepals, narrow, contracted into a claw, 3-lobed, the lateral lobes erect incurved and rather long, the middle lobe longer, narrow-lanceolate, recurved, densely covered with thick obtuse calli, either sessile or the lower ones somewhat contracted at the base.—Lindl. Gen. and Sp. Orch. 420; Hook. f. Fl. Tasm. ii. 30, t. 124; Reichb. f. Beitr. 31.

N. S. Wales. Near Bathurst, *A. Cunningham*; in the interior, *M'Arthur*.
Tasmania. Port Dalrymple, *R. Brown*; open forest land, Cheshunt, and Port Sorrel, *Archer*.
W. Australia? Swan river, *Mangles in Herb. Lindl.*—Perhaps not really belonging to this species.

21. **C. aphylla**, *Benth.* Stems slender almost filiform, glabrous, attaining 1 to 1½ ft., arising from a rather large ovoid tuber, without any leaf at all at the time of flowering, and with only 1 or 2 short scarious scales at the base, and no empty bract higher up except a small one at a short distance from the flower (subtending the pedicel). Flower solitary, slightly papillose or quite glabrous. Sepals and petals narrow-lanceolate, acutely but very shortly acuminate, tapering at the base, ¾ to nearly 1 in. long, the dorsal one erect and concave. Labellum more than half as long as the sepals, contracted into a claw, the lateral lobes erect incurved almost acute, the middle lobe longer lanceolate and recurved, the margin entire; calli rather long, linear-clavate, numerous or few, in 2 rows sometimes not extending beyond the lateral lobes, sometimes reaching halfway along the middle lobe.

W. Australia. King George's Sound, *Harvey*; Hay and Kalgan rivers, *F. Mueller*; near Three-miles Plain, *Maxwell*; Forest Hill, *Muir*.

22. **C. cærulea,** *R. Br. Prod.* 324. A smaller plant than *C. deformis*, more glabrous, the empty bract on the stem smaller and more erect but with the solitary blue flower of that species. Leaf linear or linear-lanceolate. Stem rarely 6 in. high. Lateral sepals 4 to 5 lines long, oblong-lanceolate, glandular-dotted but scarcely veined; dorsal sepal as long but narrower; petals both narrower and shorter. Labellum more than half or nearly as long as the lateral sepals, broad almost from the base; lateral lobes broad, erect, obtuse, with transverse bands of a darker hue, middle lobe lanceolate, almost acute, entire or slightly fringed; calli linear-clavate, in 2 rows. Column rather narrowly winged almost from the base. Anther-point very short.—Lindl. Gen. and Sp. Orch. 417; Hook. f. Fl. Tasm. ii. 29; Reichb. f. Beitr. 28.

N. S. Wales. Port Jackson, *R. Brown, Sieber, n.* 163, and many others; New England, *C. Stuart;* southward to Twofold bay, *F. Mueller.*

Victoria. North of Wombayne river, *F. Mueller.*

Tasmania, *Bauer* (*Brown, Reichenbach fil.*).—I have seen no Tasmanian specimens; there are none in herb. R. Brown.

23. **C. saccharata,** *Reichb. Beitr.* 63. Very nearly allied to *C. cærulea* and perhaps only a local form of it, the structure of the flower apparently the same. The leaves are rather longer and narrower and the petals and sepals also longer and narrower, the colour of the flowers, probably blue, but not recorded. The station however is so very different from that of *C. cærulea*, which in the East has not the extended range of *C. deformis*, that a further examination of fresh flowers may prove it to be really distinct.

W. Australia, *Drummond, 4th coll. n.* 324.

24. **C. deformis,** *R. Br. Prod.* 324. A small species, usually only slightly hairy and rarely much above 6 in. high. Leaf linear, sometimes rather long. Scape with a single blue flower larger than in *C. cærulea*. Sepals and petals nearly equal, 7 to 8 lines long, linear-oblong or lanceolate, rather obtuse, slightly contracted towards the base, the dorsal sepal more erect than the others and concave. Labellum with an erect linear claw of 2 to 3 lines, the lamina ovate, recurved, more or less fringed on the margin, the lateral lobes scarcely prominent or quite obsolete; calli of the disk oblong linear or slightly clavate, very numerous and crowded, sometimes covering the whole of the reflexed portion of the lamina, fewer and smaller along the claw. Column narrowly winged the whole length. Point of the anther short.—Reichb. f. Beitr. 29; *C. barbata*, Lindl. l.c. 418; Hook. f. Fl. Tasm. ii. 29, t. 123 B; *C. unguiculata*, Lindl. Sw. Riv. App. 51; Gen. and Sp. Orch. 418; Endl. in Pl. Preiss. ii. 7.

N. S. Wales. Near Albury, *Beattie.*

Victoria. Portland, *Allitt;* Port Phillip and Melbourne, *Gunn, Adamson;* Nangatta Range and Genoa river, *F. Mueller;* Ararat, *Green;* Burra-Burra, *Hinteracker.*

Tasmania. Port Dalrymple, *R. Brown;* abundant throughout the island, *J. D. Hooker;* Flinders island, *Milligan.*

S. Australia. From the Murray to St. Vincent's Gulf, *F. Mueller;* York Peninsula, *Fowler;* Biscuit flat, *Schulzen.*

W. Australia. Point Henry, *F. Mueller;* Lake Muir, *Muir;* Swan river, *Drummond, 1st coll., Preiss, n.* 2191.

Var. *albiflora.* Flower white, with the lateral lobes of the labellum rather more prominent.—S. Australia, *F. Mueller.*

25. **C. sericea,** *Lindl. Sw. Riv. App.* 52, *and Gen. and Sp. Orch.* 418. Usually softly villous, the hairs especially on the leaves shorter more dense and silky than in any other species. Leaf oblong-lanceolate, often rather broad, 1 to 3 in. long. Stem from 6 in. to 1 ft. with 1 or 2 rather large blue flowers, much incurved in the bud. Sepals and petals nearly equal, ¾ to 1 in. long, oblong-lanceolate, obtuse or nearly acute, the dorsal one more erect than the others and concave. Labellum at least half as long as the sepals, contracted at the base, cuneate upwards, nearly equally 3-lobed at the end, the lateral lobes erect, shortly oblong, incurved and obtuse, the middle lobe recurved, shortly fringed with a few calli; calli of the disk short, linear or slightly clavate, in about 4 rows, with a few long linear-clavate ones at the base of the limb, the lowest ones sometimes united in linear or oblong plates.

W. Australia. Swan river, *Drummond, 1st coll., also n.* 119; King George's Sound, *Muir;* Upper Hay river, *Miss Warburton.*

Sect. 5. Pentisia.—Sepals and petals nearly equal, all obtuse and spreading. Labellum and column very short. Calli of the disk small and numerous, in longitudinal rows.

As observed by Reichenbach fil., this section in its perianth connects *Caladenia* with *Glossodia,* but the calli of the labellum are entirely those of the former, without the remarkable basal appendages of the latter genus.

26. **C. gemmata,** *Lindl. Sw. Riv. App.* 52, *and Gen. and Sp. Orch.* 420. Loosely hairy and 6 to 8 in. high when 1-flowered, rather taller when 2-flowered. Leaf ovate or ovate-lanceolate, rarely above 1 in. long. Flower rather large, of a soft deep blue. Sepals and petals broadly elliptical-oblong, about ¾ in. long, obtuse, contracted at the base and almost clawed. Labellum broadly ovate, undivided, erect at the base but scarcely contracted into a claw, recurved at the end and obtuse; calli small and clavate in numerous longitudinal rows. Column the length of the labellum, narrowly winged the whole length. Anther with a prominent point.—Endl. in Pl. Preiss. ii. 8; *C. pellita,* Endl. l.c. (*Reichb. f.*).

W. Australia. King George's Sound to Swan river, *Drummond, Oldfield, F. Mueller,* and others, *Preiss, n.* 2193 (mixed with *Glossodia Brunonis,* according to Reichenbach f.); eastward to Salt river and South-west bay, *Maxwell.*

27. **C. ixioides,** *Lindl. Sw. Riv. App.* 52, *and Gen. and Sp. Orch.* 420. Closely resembles *C. gemmata* in habit stature and size and general structure of the flower, and possibly a variety only, but the flowers (from the dried specimens) appear to have been yellow, the labellum is not so broad, more acuminate and sometimes obscurely 3-lobed, and the calli of its surface are more prominent, almost linear.

W. Australia. Swan river, *Drummond, 1st coll.*

45. CHILOGLOTTIS, R. Br.

Dorsal sepal erect, incurved, concave, contracted at the base; lateral sepals narrow-linear or terete; petals lanceolate falcate. Labellum on a very short claw, ovate or obovate, undivided, the disk with variously arranged calli. Column elongated, incurved, winged. Anther terminal, erect, 2-celled; pollen-masses granular.—Terrestrial herbs, with small underground tubers. Leaves 2, radical or nearly so. Scape 1-flowered, without any empty bract below the one subtending the terminal pedicel.

Besides the two Australian species which are endemic, there is one from the Auckland islands and another from New Zealand, if the *Caladenia bifolia*, Hook. f., be referred to it. It has the petals broader than the lateral sepals and the 2-leaved habit of *Chiloglottis*, but was referred to *Caladenia* because the wing of the column does not extend behind the anther as in the other species, a difference like that which separates the two sections of *Glossodia*. Reichenbach fil. proposes to unite the whole genus *Chiloglottis* with *Caladenia*.

Dorsal sepal 5 to 6 lines long, much contracted at the base; lateral sepals linear-terete. Calli of the labellum slender, scattered over the whole disk . . . . . 1. *C. diphylla.*

Dorsal sepal 8 to 9 lines long, not much contracted at the base; lateral sepals linear. Calli of the labellum thick and crowded along the centre . . . . . 2. *C. Gunnii.*

1. **C. diphylla,** *R. Br. Prod.* 323. Radical leaves 2, from ovate-elliptical to oblong-lanceolate, usually acute, ¾ to 1½ in. long, contracted into a petiole of 2 to 3 lines. Scape from 3 to 6 in. high, bearing occasionally a single sheathing bract near the base besides the one subtending the terminal pedicel. Dorsal sepal cuneate, 5 to 6 lines long, shortly acuminate and much contracted in the lower half; lateral sepals linear-terete, spreading or reflexed, very slender or somewhat thickened in the upper half, as long as or longer than the dorsal one; petals lanceolate, attached by a broad base, acute, rather shorter than the sepals. Labellum more or less obovate, obtuse or acute, contracted at the base into a distinct long or short claw; calli covering the disk, mostly shortly linear, but some larger and thicker ones arranged more or less in 2 rows, and 1 or 2 at the base of the lamina, much longer rather thick and reflexed, all however very variable as to form and numbers. Column about as long as the petals.—Bauer, Ill. Pl. N. Holl. t. 8; Lindl. Gen. and Sp. Orch. 386; Hook. f. Fl. Tasm. ii. 23; Reichb. f. Beitr. 27; *Caladenia diphylla*, Reichb. f. Beitr. 67; *Epipactis reflexa*, Labill. Pl. Nov. Holl. ii. 60, t. 211, f. 1; *Acianthus? bifolius*, R. Br. Prod. 322; Reichb. f. Beitr. 26.

Queensland. Brisbane river, Moreton bay, *F. Mueller.*
N. S. Wales. Port Jackson, *R. Brown, Woolls;* Clarence river, *Wilcox.*
Victoria. Wilson's Promontory, *F. Mueller* (without flowers, but probably this species).
Tasmania. Shaded places, Woolnorth, Circular Head, &c., *Gunn, Archer;* Southport, *C. Stuart.*

The calli of the labellum vary much, the slender clavate ones are sometimes limited to a broad tuft or patch at the base of the lamina, sometimes extend over a great part

of it and descend along the claw, the thick ones are usually few and the 1 or 2 long reflexed ones are often very prominent; sometimes also there are a pair of small ones near the base of the claw.

2. **C. Gunnii,** *Lindl. Gen. and Sp. Orch.* 387. Often a smaller plant than *C. diphylla*, but not so slender. Leaves rather larger and broader, sometimes nearly 2 in. long. Scape usually short, but in some specimens 7 to 8 in. long, the sheathing bract obtuse and loose, ½ in. long. Dorsal sepal 8 to 9 lines long, obovate-oblong, much less contracted below the middle than in *C. diphylla*, acuminate acute or almost obtuse. Lateral sepals narrow-linear or slightly lanceolate at the base, acutely acuminate but not terete; petals rather broadly lanceolate-falcate, almost as long as the sepals. Labellum on a very short claw, broadly ovate, acute: calli all thick, either crowded along the centre of the disk or more or less arranged in 2 rows, without any of the slender linear-clavate ones of *C. diphylla*.—Hook. f. Fl. Tasm. ii. 23, t. 108; *Caladenia Gunnii*, Reichb. f. Beitr. 67.

Victoria. Dandenong range, higher mountains on the Avon river, summit of Mount William, at an elevation of 5000 ft., *F. Mueller.*

Tasmania. Shaded banks, &c., Circular Head, Cheshunt, Hobarton, *Gunn, Archer,* and others; Southport, *C. Stuart;* summit of Ben Lomond, at an elevation of 5000 ft., *Milligan.*

46. GLOSSODIA, R. Br.

Sepals and petals nearly equal, spreading. Labellum sessile, undivided, not fringed, without calli or plates on the disk, but, at its base, 2 (sometimes united into 1) linear clavate calli or appendages erect against the column and from half to nearly its whole length. Column erect, often incurved, 2-winged. Anther erect, 2-celled, the outer valves broad, the inner much smaller, the connective produced into a small point. Pollen-masses granular.—Terrestrial herbs usually hairy, with small underground tubers. Leaf solitary, oblong or lanceolate, from within a scarious sheath close to the ground; flowers 1 to 2 on an erect scape, leafless except an empty sheathing bract at or below the middle, and a similar bract under each pedicel. Flowers erect, blue or purple.

The genus is limited to Australia. It is closely allied to the section *Pentisia* of *Caladenia*, but the peculiar position and form of the calli, constant in all the species, and probably performing some special function in the fertilizing process, may justify its retention as a genus, rather than merging it into *Caladenia*, as proposed by Reichenbach fil. The two sections might almost be considered as distinct genera.

Sect. 1. **Euglossodia.**—*Labellum with a broad biconvex pubescent base. Column-wing not at all or scarcely extending above the base of the anthers. Eastern species.*

Sepals and petals 7 to 10 lines long. Labellum-appendage single, dilated and 2-dentate at the apex . . . . . 1. *G. major.*
Sepals and petals 4 to 6 lines long. Labellum-appendages 2, linear-clavate, scarcely united at the base . . . . . 2. *G. minor.*

Sect. 2. **Eleutheranthera.**—*Labellum narrow and glabrous. Column-wing extending beyond the anther and forming a hood over it. Western species.*

Flowers usually 2, deep blue. Labellum shorter than the column, lanceolate or linear . . . . . 3. *G. Brunonis.*

Flowers usually solitary (reddish-purple?). Labellum as long as or longer than the column, oblong, emarginate . . . . . 4. *G. emarginata.*

Sect. 1. Euglossodia.—Labellum with a broad biconvex pubescent base. Column-wing not at all or scarcely extending above the base of the anthers.

1. **G. major,** *R. Br. Prod.* 326. Hirsute with long spreading hairs with a few shorter ones sometimes glandular. Tuber ovoid, often ½ in. long. Leaf oblong or lanceolate, 1 to 2 in. long. Scape 6 in. to 1 ft. high with 1 or rarely 2 blue flowers. Sepals and petals oblong-lanceolate, obtuse, 6 to 8 lines long, not blotched. Labellum not half so long as the calyx, ovate broad biconvex and pubescent with white hairs in the lower half, the upper half lanceolate blue and glabrous, the basal callus or appendage single, linear, erect against the column, with a broad reflexed 2-dentate or 2-lobed head. Column as long as the labellum, broadly winged, but the wing not at all or scarcely extending along the anther.—Lindl. Gen. and Sp. Orch. 423; Endl. Iconogr. t. 41; Hook. f. Fl. Tasm. ii. 31, t. 120; Reichb. f. Beitr. 34; *Caladenia major,* Reichb. f. Beitr. 67.

Queensland. Moreton bay, *Leichhardt;* Armidale, *Parrott.*
N. S. Wales. Port Jackson to the Blue Mountains, *R. Brown, Sieber, n.* 162, *Fl. Mixt. n.* 519, and many others; in the N.W. interior, *Fraser;* New England, *C. Stuart;* and southward to Twofold bay, *F. Mueller.*
Victoria. Glenelg river, *Robertson;* Portland, *Allitt;* Port Phillip and Melbourne, very common, *F. Mueller,* and others; Ballarat, *Glendinning.*
Tasmania. Common in poor sandy soil throughout the colony, *J. D. Hooker.*
S. Australia. Encounter bay, *Whittaker;* Bugle and Lofty ranges, *F. Mueller.*

2. **G. minor,** *R. Br. Prod.* 326. Hirsute with long spreading hairs mixed with shorter sometimes glandular ones as in *G. major,* but a smaller plant. Stems rarely above 3 or 4 in. high and almost always 1-flowered. Leaf lanceolate, the small sheathing bract usually green. Flower blue. Sepals and petals oblong-lanceolate, 5 to 6 lines long. Labellum about ⅓ the length of the sepals, broad, biconvex and pubescent with white hairs or papillæ in the lower half, the spreading upper half triangular, acute, flat, glabrous, the basal calli or appendages 2, linear, flattened, clavate at the end, rather shorter than the column, very shortly united at the base. Column nearly as long as the labellum, broadly winged but the wing not produced on the anther.—Lindl. Gen. and Sp. Orch. 423; Reichb. f. Beitr. 34; *Caladenia minor,* Reichb. Beitr. 67.

Queensland. Archer's Station, Moreton bay, *Leichhardt.*
N. S. Wales. Port Jackson, *R. Brown, Sieber, n.* 161, and others; New England, *C. Stuart;* southward to Twofold bay, *F. Mueller.*
Victoria. Genoa river, towards Mount Imlay, *F. Mueller.*
Out of more than two hundred specimens from various localities I have only seen one, in herb. F. Muell., from Twofold bay, with two flowers.

Sect. 2. Eleutheranthera, *Endl.*—Labellum narrow and glabrous. Column-wing extending beyond the anther, adnate to it along the centre, and forming a hood over it. . . .

3. **G. Brunonis,** *Endl. Nov. Stirp. Dec.* 16, *and in Pl. Preiss.* ii. 9. A pubescent or softly hairy plant of 6 in. to 1 ft., with 1 or 2 rather large blue flowers, much resembling *Caladenia gemmata*. Leaf narrow-lanceolate, 1 to 3 in. long, sometimes nearly glabrous. Sepals and petals ½ to ¾ in. long. Labellum reduced to an irregularly lanceolate or almost linear lamina, often shorter than the column, entire, without calli on its disk, but at its base are 2 long thick linear obtuse calli often as long as the lamina, sometimes united at the base, erect against the column. Column half as long as the sepals, with a broad wing produced beyond the anther into a concave hood. Anther-case pubescent, shortly acuminate.—Lindl. Gen. and Sp. Orch. 424; F. Muell. Fragm. vi. 83; *Caladenia Brunonis*, Reichb. Beitr. 67.

W. Australia. King George's Sound and adjoining districts, *Oldfield, F. Mueller*, and many others; Swan river, *Drummond, 1st coll.*; Bremer bay and Gales brook, *Maxwell.*

4. **G. emarginata,** *Lindl. Gen. and Sp. Orch.* 424. Nearly allied to *G. Brunonis*, with the same habit and foliage, the scape however more frequently 1-flowered, the flower usually larger, not so blue in the dried state, and described by Oldfield as rose-coloured. Column with a hood-shaped wing extending beyond the anther as in that species. Labellum more developed, often exceeding the column, broadly oblong-linear, very obtuse or truncate and usually emarginate, the basal calli or appendages linear, slightly clavate, about as long as the labellum.—*Caladenia emarginata*, Reichb. Beitr. 67.

W. Australia. Swan river, *Drummond, 1st coll.*; Vasse river, *Pries;* Tone, Tweed, Kalgan, and Vasse rivers, *Oldfield;* Greenough Flats, *C. Gray;* Lake Muir, *Muir.*

Tribe 6. Ophrydeæ.—Anther adnate to the top of the column over the stigma, the cells usually forming 2 lobes. Pollen-masses 2, granular, attached by caudicles to one or two glands or pouches over the stigma. Terrestrial herbs; rhizomes with annually renewed tubers. Stems simple, leafy. Flowers spicate.

47. HABENARIA, R. Br.

Dorsal sepal erect, very concave; lateral sepals free, connivent or spreading; petals entire or bipartite, usually connivent under the dorsal sepal. Labellum 3-lobed or rarely entire, with a spur or pouch at the base. Column very short, with 2 anterior linear-clavate processes lying on or partially adnate to the base of the labellum. Anther erect, with a broad connective and marginal cells, but the connective usually so short that the erect diverging cells appear disconnected. Pollen granular in 2 masses in each cell, each pair with a caudicle attached to a gland or an appendage of the stigma opposite to the cell, and more or less confluent with it.—Terrestrial herbs, with underground usually ovoid tubers. Leaves alternate on the stem or collected near the base. Flowers several or many in a terminal spike.

A large genus dispersed over the warmer and temperate regions of both the New and the Old World. Of the five Australian species, two are East Indian, the other three, as far as known, endemic.

Stem leafy, with broad leaves. Petals 2-partite. Labellum with 3 narrow-linear lobes. Anther-connective as high as the cells . 1. *H. trinervis.*
Leaves narrow, near the base of the stem. Petals undivided. Anther-connective very much shorter than the cells.
Lateral lobes of the labellum long and very narrow-linear like the middle lobe.
Leaves narrow-oblong. Spur of the labellum above 1 in. long 2. *H. elongata.*
Leaves linear. Spur of the labellum under ½ in. long . . . 3. *H. graminea.*
Lateral lobes of the labellum lanceolate-falcate; middle lobe linear. Spur longer than the sepals . . . . . 4. *H. ochroleuca.*
Lateral lobes of the labellum very short and broad or quite obsolete, rarely shortly acuminate; middle lobe oblong or broadly linear. Spur shorter than the sepals . . . . . 5. *H. xanthantha.*

1. **H. trinervis,** *Wight Ic. Pl. t.* 1701. Stems erect, leafy, 1 ft. high or rather more. Leaves ovate-oblong or ovate-lanceolate, 2 to 4 in. long, more or less prominently 3- or 5-nerved. Spike not long and rather dense, the broad bracts often as long as the ovary and very conspicuous. Sepals broad, about 3 lines long, all nearly equal, the dorsal one erect and concave, the lateral ones oblique; petals about as long, divided to the base into 2 linear segments, both almost erect and parallel. Labellum not exceeding the sepals, of 3 linear lobes; spur ½ in. long, clavate towards the end. Anther about 1 line long, the marginal cells not exceeding the connective and much longer than the processes of the stigma. Anterior processes of the column oblong, incurved, rather flat, free from the labellum.

N. Australia. Port Darwin, *Schultz, n.* 828.—The species is also in the Peninsula of India. It is very nearly allied to the *H. digitata*, Lindl., from the Sillhet mountains and from Moulmeyn, which differs chiefly in the anterior lobes of the petals deflexed and curved like the lateral lobes of the labellum.

2. **H. elongata,** *R. Br. Prod.* 313. A rather stout species, above 1 ft. high. Leaves oblong, 2 to 4 in. long. Spike rather dense. Dorsal sepal ovate, obtuse, 2 to 2¼ lines long; petals about as long, broadly falcate; lateral sepals rather longer, adnate at the base to the sides of the spur. Labellum lobes very narrow-linear, the middle one above ½ in. long, the lateral ones rather shorter; the spur at least 1¼ in. long, thickened beyond the middle. Anterior processes of the column clavate and cristate.—Lindl. Gen. and Sp. Orch. 317; F. Muell. Fragm. vii. 15; Reichb. f. Beitr. 6.

N. Australia. Arnhem S. bay, and islands off the coast of Arnhem's Land, abundant, *R. Brown.*
Queensland. Rockhampton, *O'Shanesy.*

3. **H. graminea,** *Lindl. Gen. and Sp. Orch.* 318. Stems slender, under 1 ft. high. Leaves at the base of the stem linear or linear-lanceolate, acute, under 3 in. long. Spike slender, short or long, with short narrow bracts. Dorsal sepal in the typical form 2½ lines long, lanceolate, concave; petals as long, slightly falcate; lateral sepals rather longer, broadly falcate, all rather obtuse. Labellum deeply di-

vided into 3 narrow-linear lobes about as long as the sepals; the spur about 4 lines long, thickened beyond the middle. Anterior processes of the column curved, rather long, adnate at the base to the labellum. Anther-cells adnate to linear processes of the stigma quite separated from each other by the very short connective and rostellum.—F. Muell. Fragm. vii. 16.

Queensland. Rockingham bay, *Dallachy*.—The species is also in Khasia and Silhet.

Var. *arnhemica*. Habit and foliage of the typical form, but the flowers much smaller. Galea 1¼ to 1½ lines long, slightly recurved and acute with a broad base; lateral sepals rather longer, the spur not 3 lines long and scarcely thickened beyond the middle.—*H. arnhemica*, F. Muell. Herb.

N. Australia. Port Darwin, *Schultz*, *n.* 162, 188, and with still smaller flowers, Port Essington, *Armstrong*.

4. **H. ochroleuca,** *R. Br. Prod.* 313. Under 1 ft. high. Leaves few, distant or collected at the base of the stem, lanceolate, short. Spike dense or interrupted. Dorsal sepal broad, obtuse, about 2 lines long; lateral sepals rather longer; petals considerably shorter. Labellum with the lateral lobes lanceolate falcate, the middle lobe narrow-linear, as long as the sepals; spur longer than the sepals, much and shortly clavate at the end. Anterior processes of the column very shortly adnate.—Lindl. Gen. and Sp. Orch. 323; Reichb. f. Beitr. 6.

N. Australia. Islands of the North Coast, *R. Brown*.

5. **H. xanthantha,** *F. Muell. Fragm.* vii. 16. Stems slender, often above 1 ft. high. Leaves at the base of the stem, linear or linear-lanceolate and acutely acuminate as in *H. graminea*. Flowers yellow, in a rather dense spike. Dorsal sepal and petals erect, obtuse, about 3 lines long; lateral sepals nearly the same length, quite free from the spur. Labellum linear-oblong or lanceolate, obtuse, as long as the petals and more or less 3-nerved like them, sometimes quite entire, sometimes with lateral lobes short and broad or tapering into a linear point, and the two lateral lobes sometimes unlike each other; spur curved, shorter than the sepals. Anterior processes of the column quite free from the labellum, and a small lateral tooth on each side between the anther and the anterior processes. Anther-cells deeply separated as in *H. graminea*.—*H. propinquior,* Reichb. f. Beitr. 53.

Queensland. Rockingham bay, *Dallachy*.

Tribe 7. Apostasieæ.—Anthers 2, lateral, near the base of the style, with a dorsal rudimentary or rarely perfect anther. Stigma terminal. Pollen granular. Terrestrial herbs.

48. APOSTASIA, Blume.

(Niemeyera, *F. Muell.*).

Sepals and petals 3 each, nearly equal and similar, spreading or recurved, the labellum similar to the other petals. Anthers 2, oblong-linear, attached near the base of the style, erect and embracing the style, with

occasionally a dorsal staminode or imperfect anther. Style linear or filiform, with a terminal somewhat dilated obtuse or 3-toothed stigma. Ovary 3-celled, the placentas affixed to the axis.—Erect herbs with leafy stems. Flowers small, yellow, in simple or branched spreading racemes in the upper axils.

Besides the Australian species, which appears to be endemic, there are two or three nearly allied to it in East India and the Archipelago.

1. **A. stylidioides,** *Reichb. f. in Herb. Kew.* An erect glabrous plant, with simple stems of 6 to 8 in. Leaves almost grass-like, linear, tapering into long points, their sheathing imbricate bases covering the stem, varying from 3 to 6 in. long, with 1, 3 or rarely more nerves prominent underneath. Racemes shorter than the leaves, slender but rigid. Bracts lanceolate, 1 to 2 lines long. Ovary nearly 3 lines long at the time of flowering, elongated but still very narrow when in fruit. Sepals and petals narrow-linear, slightly recurved, about 2 lines long, the sepals obtuse, the petals with a dorsal point just below the apex. Anthers 2, without any rudimentary one, the two cells very unequal at the base, the connective scarcely produced beyond the cells. Style rather thick, the stigma with 3 short unequal erect teeth or lobes.—*Niemeyera stylidioides*, F. Muell. Fragm. vi. 96.

Queensland. Rockingham bay, *Dallachy.*—The general habit inflorescence size of flowers, &c. are quite those of the Indian *A. nuda*, with the leaves perhaps narrower and the stature lower. The anthers are those of *A. Wallichiana*, but without the additional staminode of that species, except that in some flowers I find the style abortive or nearly so, and replaced as it were by a staminode. The dorsal points of the petals are very variable, and appear sometimes on the sepals also.

I have followed Brown in considering the group of *Apostasieæ* as a tribe of *Orchideæ* rather than as a distinct Order, notwithstanding the number of anomalies it unites. It has the exceptional inflorescence of *Corymbis*, the perianth of *Thelymitra*, two anthers as in *Cypripedium*, and the 3-celled ovary of *Cypripedium* (*Uropedium* and *Selenipodium.*)

Order CXXI. BURMANNIACEÆ.

Flowers hermaphrodite, regular. Perianth superior, persistent, tubular or campanulate, usually 6-lobed, the 3 inner lobes often smaller or sometimes wanting. Stamens 3 or 6, inserted in the tube and shorter than the perianth. Anthers 2-celled. Ovary inferior, 3-celled or with 3 parietal placentas, the ovules very numerous. Style single, with 3 short branches stigmatic at the clavate or dilated ends. Fruit a capsule opening in loculicidal slits or valves. Seeds minute, the embryo apparently homogeneous.—Herbs, often slender. Leaves entire, radical or nearly so, rarely alternate along the stem, sometimes all reduced to small scales. Flowers terminal, solitary or several along a 2-branched rarely 3-branched rhachis, centrifugally developed, each flower opposite to a small often minute bract.

A small tropical Order, usually frequenting swamps or wet places, or decaying vegetable soils, common to the New and the Old World. The only Australian genus has the general range of the Order.

1. BURMANNIA, Linn.

(Gonyanthes, *Miers.*)

Perianth tubular, 3-winged or 3-angled, the 3 inner lobes smaller or wanting. Anthers 3, sessile or nearly so, below the inner perianth-lobes, the cells short, separated by a broad connective, opening transversely, with a small crested appendage behind each cell. Ovary 3-celled. Capsule opening between the dissepiments.—Herbs with radical leaves or all the leaves rarely reduced to scales. Flowers sessile or pedicellate along the branches of a forked cyme, reduced sometimes to a single flower.

The genus is common to the New and the Old World. One and probably both the Australian species have a wide range over East India and the Archipelago.

Radical leaves lanceolate. Flowers several in a once-forked cyme.
Perianth at least twice as long as broad . . . . . 1. *B. disticha.*
Leaves linear-setaceous, very small. Flowers solitary or few. Perianth with the wings as broad as long . . . . . 2. *B. juncea.*

1. **B. disticha,** *Linn. Spec.* 411. Stems simple or scarcely branched, erect, glabrous, attaining 1 to 2 ft. Leaves chiefly radical, sessile, sheathing at the base, lanceolate, acute, spreading, all under 1 in. in most specimens, 2 to 2½ in. long in luxuriant ones; a few along the stem sometimes similar to the radical ones but smaller and more erect, or more frequently reduced to sheathing scales. Flowers green more or less tinged with blue, or in the Australian specimens more frequently of a deep blue, in a once-forked cyme, sometimes very compact, sometimes each branch 1 to 2 in. long. Bracts shorter than the flower. Perianth including the wings about ½ in. long, and scarcely ¼ in. broad, the 3 outer lobes ovate, concave, not half so long as the tube, the dorsal wings commencing about the middle of the lobes, truncate or rounded at the top, and continued along the tube to the base of the ovary, tapering into the short pedicel; inner lobes of the perianth oblong-linear, from half as long to nearly as long as the outer ones. Anthers immediately under the inner lobes, the cells small, separated by a prominent connective, the dorsal appendages nearly as long as the cells. Capsule usually occupying about half the length of the perianth, but sometimes continued higher up, opening at the top between the ridges with a disposition to split transversely as observed by Thwaites.—Roxb. Corom. Pl. t. 242; *B. distachya,* R. Br. Prod. 265.

N. Australia. Liverpool river, *Gulliver.*—A single slender specimen with only 3 flowers, which however are quite those of *B. disticha.*
N. S. Wales. Port Jackson, *R. Brown, Woolls;* New England, *C. Stuart;* Clarence river, *Beckler;* edges of swamps, Tweed river, *C. Moore, Guilfoyle.*

2. **B. juncea,** *Soland. in R. Br. Prod.* 265. Stems very slender, almost filiform, 6 in. to near 1 ft. high. Leaves few at the base of the stem, linear-filiform, ¼ to ½ in. long, and sometimes one or two smaller ones higher up, but the stem usually with only a few small distant scales. Flowers sometimes only one at the end of the stem, sometimes

in a once-forked cyme with 2 to 4 on each branch, all on short slender pedicels. Perianth including the wings about 3 lines long and quite as broad when in fruit, the outer lobes broad and only ¾ line long, the inner lobes very minute in the flower examined, the dorsal wings rounded at both ends. Anthers at a little distance below the inner lobes. Ovary and capsule occupying about half the length of the tube, the capsule usually opening by a transversely oblique fissure.

N. Australia. Port Essington, *Armstrong.*
Queensland. Endeavour river, *Banks and Solander.*

This species is scarcely to be distinguished but by its longer stem and narrow filiform leaves from the *B. pusilla*, Thw. Enum. Pl. Ceyl. 325, or *Gonyanthes pusilla*, Miers in Trans. Linn. Soc. xviii. 537, t. 38. It is also very closely allied to the common Indian *B. cœlestis*, Don, with which Banks and Solander's specimens are laid down on the same sheet in the Banksian herbarium as one species, the leaves however of *B. cœlestis* are not quite so narrow, and the perianth with the wings is longer than broad, in the latter respect, however, the short broad shape is not so decided in the Banksian as in Armstrong's specimens. Further investigation may induce the reducing both *B. pusilla* and *B. cœlestis* to varieties of *B. juncea.*

Order CXXII. IRIDEÆ.

Flowers hermaphrodite, regular or irregular. Perianth superior, with a short or distinct tube, the limb of 6 petal-like segments, the 3 inner ones sometimes very small. Stamens 3, inserted at the orifice of the tube or base of the outer segments, or rarely (in *Campynema*) 6; all fertile or (in *Diplarrhena*) one reduced to a barren filament. Filaments free or united in a tube. Anther-cells 2, parallel, erect, opening outwards. Style more or less divided into 3 lobes or branches, usually stigmatic at the end and sometimes broad and petal-like. Ovary inferior, 3-celled, with several often numerous ovules in each cell. Capsule opening loculicidally in 3 valves. Seeds albuminous, with a small embryo, the radicle next the hilum.—Herbs with a perennial tuberous creeping bulbous or very short rhizome, rarely annuals. Leaves usually either radical or alternate and equitant, that is distichous, sheathing and laterally flattened at the base, produced into a linear lamina laterally or vertically not horizontally flattened so that the inner edge is towards the stem, the outer edge a continuation of the keel of the sheath. Flowers either solitary and terminal or in spikes or clusters within one or two bracts often called *spathas*, the bracts within the cluster usually imbricate, but each flower opposed to the bract of the same node, not in its axil. Perianths in the Australian genera mostly blue white or rarely yellow, in several South African genera showing a great variety of rich colours.

The Order is generally dispersed over the New and the Old World, more abundant in temperate than in tropical regions, and especially rich and diversified in South Africa. Of the seven genera here included, four are endemic, one, *Libertia*, extends over New Zealand and extratropical South America; the *Morœa* is a solitary very local representative of a South African genus, and the *Sisyrinchia* are introduced weeds from South America.

The peculiar inflorescence of the several-flowered *Irideæ* does not appear to have been generally noticed. It is a kind of cyme, each flower terminates an axis, which is continued by the development of an axillary bud between the subtending bract and the flower, which thus becomes opposed to the bract of the same node. As these subtending bracts are not superposed and unilateral as in the ordinary forked cyme, but alternate along the branch, the rhachis assumes a zigzag not a scorpioid character.

Stamens 3.

Perianth with 3 large outer and 3 very small inner segments. Style longer than the anthers, with 3 broad-spreading laminæ.

Spike or cluster simple and terminal or rarely lateral also. Only two anthers . . . . . 1. DIPLARRHENA.

Spike solitary and terminal, the outer bracts enclosing 2 sessile spikelets. Three anthers . . . . . 2. PATERSONIA.

Perianth with 6 nearly equal spreading segments. Style divided into 3 oblong petal-like segments opposite to and arching over the anthers . . . . . 3. MORÆA.

Perianth with 6 spreading segments. Style shorter than the stamens, with 3 linear or linear-subulate branches scarcely dilated at the end or acute.

Perianth-segments nearly equal. Outer bracts erect and closely sheathing.

Filaments free. Ovary and capsule oblong, sessile or nearly so . . . . . 4. ORTHROSANTHUS.

Filaments connate below the middle or to the top. Ovary and capsule obovoid or globular on long pedicels . . 5. SISYRINCHIUM.

Perianth with 3 outer segments usually smaller or rarely nearly equal to the inner ones. Bracts all membranous and open. Filaments free . . . . . 6. LIBERTIA.

Stamens 6.

Perianth-segments nearly equal . . . . . 7. CAMPYNEMA.

Besides the above, several South African *Irideæ* have occasionally been found to have escaped from gardens. Amongst them F. Mueller's collection includes *Trichonema ochroleucum*, Ker, *Watsonia angusta*, Sweet, *Sparaxis tricolor*, Bot. Mag., and *Iris spuria*, Linn., var. *halophila*.

1. DIPLARRHENA, Labill.

Perianth slightly irregular, divided to the ovary into 6 segments, the three outer erect at the base spreading upwards obovate, the upper one rather larger and more concave, the three inner ones much smaller narrow and less spreading. Filaments 3, free, the upper one without any anther and short, the other two unequal, each with an oblong-linear anther. Style slender, longer than the stamens, with 3 broad thin petal-like laminæ bearing the stigmas, one much larger than the others. Capsule oblong, acutely 3-angled, loculicidally 3-valved, the pericarp somewhat coriaceous. Seeds orbicular, flat.—Herbs with a very short rhizome or leafy base. Leaves mostly radical, long and flat. Stem erect, simple or branched. Flowers rather large, pedicellate, in a simple spike or cluster sessile within two rigidly herbaceous sheathing bracts, the spike solitary and terminal, or rarely one also in the axil of one or more leaves lower down.

The genus is limited to Victoria and Tasmania.

Stems 1 to 2 ft. high. Leaves mostly under $\frac{1}{4}$ in. broad. Flowers white . . . . . 1. *D. Moræa.*

Stems above 2 ft. high. Leaves ½ to ¾ in. broad. Flowers variegated blue and yellow . . . . . 2. *D. latifolia.*

1. **D. Moræa,** *Labill. Voy.* i. 157, t. 15. Perfectly glabrous in all its parts. Rhizome or leafy base of the stem short. Leaves chiefly radical, rigid, very flat, 1 to 2 ft. long, 2 to 3 lines broad. Stems 1 to 2 ft. high, with a few shorter leaves besides the radical ones. Spike single and terminal in all the specimens seen, resembling outwardly those of *Patersonia*, but simple, not composed of 2 spikelets, two outer bracts rigidly herbaceous, prominently striate, 2 to 2½ in. long, acutely acuminate, keeled, with narrow scarious margins, the inner ones membranous or scarious, each one as well as the second outer one opposed to a flower. Pedicels slender but shorter than the bracts, carrying usually the top of the ovary to the level of the bract, and somewhat longer when in fruit. Outer perianth-segments pure white, obovate, about 1½ in. long, the upper one less spreading broader and more concave than the other; inner segments oblong-cuneate, ½ to ⅔ as long as the outer, white or slightly tinged with violet and yellow.—R. Br. Prod. 304; Hook. f. Fl. Tasm. ii. 34; F. Muell. Fragm. vii. 94; *Moræa diandra*, Vahl, Enum. ii. 154.

N. S. Wales. Cape Howe, *C. Walter.*

Victoria. Wilson's promontory, and gregariously between Mount Barclay and Mount Lizar, *F. Mueller.*

Tasmania, *Labillardière;* Port Dalrymple, *R. Brown;* abundant in good soil throughout the island, *J. D. Hooker* and others.

Var. *alpina*, Hook. f. Leaves rather broader and shorter, but very different from those of *D. latifolia*, and flower white as in the typical form.—Western Mountains, *Gunn.*

2. **D. latifolia,** *Benth.* A much taller and stouter plant than *D. Moræa*, with the leaves from ½ to ¾ in. broad "flowering along the whole scape" according to Oldfield's notes; I have only seen a second spike in the axil of one of the leaves in a single specimen in Herb. F. Mueller. Flowers larger than in *D. Moræa* and "the outer segments more concave" (*Oldfield*); "variegated blue and yellow" (*C. Stuart*), the dried specimens showing a bluish tinge in the whole perianth which they never do in *D. Moræa.*

Tasmania. From one-third of the way up to the summit of Mount Lapeyrouse, *Oldfield, C. Stuart.*

2. PATERSONIA, R. Br.

(Genosiris, *Labill.*)

Perianth regular, with a filiform tube and 3 outer broad spreading segments, the 3 inner ones very small and erect or almost obsolete. Filaments united to the middle or almost to the top into a tube; anthers oblong or lanceolate, the cells usually separated by a narrow membranous connective. Style filiform, longer than the anthers, usually constricted or articulate either near the base of the anthers or near the top, and often bent down or breaking off at the constriction,

the 3 stigmatic lobes obovate-orbicular or broadly oblong, contracted and united in a cup or narrow and free at the base, reflexed on the style in the bud, spreading horizontally when in flower. Capsule sessile within the bracts, linear or oblong, 3-angled, opening loculicidally in 3 valves.—Herbs with a perennial short rhizome. Leaves in radical distichous tufts or rarely on shortly elongated stems, long and grass-like or rigid. Scapes or peduncles long erect and leafless, bearing a single oblong or lanceolate terminal spike, with two outer bracts enclosing 2 sessile spikelets, each with 1, 2 or several flowers and as many membranous more or less scarious bracts, each bract of the spikelets opposed to a flower on the same node. Perianths blue or very rarely yellow or white.

The genus is limited to extra-tropical Australia, or scarcely crosses the tropics on the East coast, and is readily distinguished from all others by the inflorescence, as well as by other characters.

It has been proposed by F. Mueller to revert to Labillardière's generic name under the strict rules of priority. But Brown's has been so universally adopted with a full knowledge of the circumstances, and is so generally known by gardeners as well as botanists, that it would appear only to produce confusion now to substitute for *Patersonia* one so defective in composition as *Genosiris*.

The solitary terminal spike enclosing two spikelets appears to be constant in and peculiar to this genus; but I have sometimes found one spikelet subtended by the outermost bract, and the other by the second bract, but more frequently both spikelets are within the second bract, one of them subtended by a third; and I have observed sometimes the first bract only, sometimes the first and second, and once it appeared to me the third bract also without a flower opposed to it. I have not, however, had it in my power to dissect a sufficient number of spikes to show how far these differences may be specific.

Quite glabrous. Outer bracts of the spike prominently striate.
  Perianth-tube exserted. Staminal-tube short, trifid . . . 1. *P. glauca.*
Quite glabrous. Outer bracts smooth or obscurely striate.
  Perianth-tube not exserted. Staminal tube short, trifid.
  Scape usually much longer than the leaves. South-eastern species . . . . . 2. *P. longiscapa.*
  Scape usually shorter than the leaves. Western species . . 3. *P. occidentalis.*
Glabrous or the leaves hairy on the edges. Outer bracts smooth or obscurely striate. Staminal-tube long, undivided.
  Quite glabrous. Leaves under 3 lines broad. Outer bracts 2 to 2½ in. long, acute, prominently keeled and usually pale.
    Flowers blue . . . . . 4. *P. umbrosa.*
    Flowers yellow . . . . . 5. *P. xanthina.*
  Leaves often hairy on the edges. Outer bracts usually of a rich brown.
    Tall stout plant. Leaves 4 lines broad, with prominent usually red margins. Outer bracts of the spike broad . 6. *P. limbata.*
    Low or slender plants. Leaves 1 line broad or less. Spike narrow.
      Usually glabrous. Leaves rather thick, scarcely bordered. Scapes glabrous, ½ to 1 ft. high . . . . . 7. *P. juncea.*
      Slightly hairy. Habit of *P. pygmæa*. Flowers white . 8. *P. Maxwelli.*
      Leaves hairy, usually bordered. Scape woolly, under 6 in. 9. *P. pygmæa.*
Leaves woolly or hairy at the base. Scape woolly. Outer bracts dark and strongly striate, covered with deciduous wool. Staminal tube trifid, short.
  Leaves about 1 line broad. Eastern species . . . . . 10. *P. longifolia.*

Leaves about 2 lines broad or more.
Leaves woolly on the edges only.
Wool of the spike close and silky. Eastern species . . 11. *P. sericea.*
Wool of the spike copious but loose. Western species . 12. *P. lanata.*
Leaves woolly all over near the base. Western species . . 13. *P. rudis.*
Leaves glabrous or hairy at the base. Outer bracts green, glaucous or pale, strongly striate, glabrous or slightly silky hairy. Staminal-tube (always?) long and undivided.
Outer bract 3 in. long, silky-hoary. Stem very short. Leaves glabrous, 3 lines broad . . . . . 14. *P. macrantha.*
Outer bracts about 2 in. long, silky-hoary. Stem elongated.
Leaves glabrous or hairy on the edges, 2 lines broad or less 15. *P. glabrata.*
Outer bracts about 1¼ in. long, glabrous, glaucous. Stem very short. Leaves 1 line broad, the margins prominent, hairy near the base . . . . . 16. *P. Drummondii.*
Outer bracts 1 to 1¼ in. long, the 2nd conspicuously higher attached than the 1st. Leaves very narrow.
Stem somewhat elongated. Leaves rigid, hairy at the base. Scape glabrous . . . . . 17. *P. inæqualis.*
Stems very short, almost bulbous. Leaves grass-like, glabrous or finely ciliate. Scape cottony-woolly at the base 18. *P. graminea.*
Outer bracts 1 to 1¼ in. long, densely covered as well as the dwarf scape with very long soft hairs. Stems almost bulbous . . . . . 19. *P. babianoides.*

1. **P. glauca,** *R. Br. Prod.* 304. Stems exceedingly short, clustered on the rhizome, with a few outer rigid sheathing scales, gradually passing into erect rigid leaves, the longest from ½ to 1½ ft. long and 1½ to nearly 2 lines broad, rather less flat than in *P. occidentalis* and the margins not thickened. Scapes usually much shorter than the leaves, but occasionally exceeding them, with 1 or 2 sheathing scales at their base. Spike with the two outer bracts 1½ to 1¾ in. long, acute, rigid, somewhat glaucous, finely but prominently striate, each spikelet containing 3 or 4 flowers, the bracts membranous and quite glabrous, as well as the flowers. Perianth-tube usually exceeding the bracts by 3 to 5 lines; outer lobes ovate or ovate-oblong, obtuse, above ½ in. long; inner ones oblong-lanceolate, scarcely more than 1 line long. Staminal column short, divided to about the middle. Style slightly thickened at the end, the laminæ ovate, but I do not find the fringes of long cilia figured by Endlicher from Bauer's drawing.—Hook. f. Fl. Tasm. ii. 34; Bot. Mag. t. 2677; Lodd. Bot. Cab. t. 1182; Endl. Iconogr. t. 50; *Genosiris fragilis,* Labill. Pl. Nov. Holl. i. 13, t. 9; F. Muell. Fragm. vii. 36.

N. S. Wales. Hunter's river, *R. Brown;* New England, *C. Stuart.*
Victoria. Glenelg river, *F. Mueller.*
Tasmania. Port Dalrymple, *R. Brown;* abundant in wet peaty soils in the northern parts of the island, *J. D. Hooker.*

2. **P. longiscapa,** *Sweet, Fl. Austral.* t. 39. A glabrous plant like *P. glauca* and *P. occidentalis,* but the leaves usually shorter, and whether short or long the scape almost always still longer. Leaves flat and the margins often nerve-like, as in *P. occidentalis,* of which this may be a variety. Scape usually thickened and striate close under the spike, but the outer bracts fully 1½ in. long, quite smooth or very obscurely

striate. Spikelets with 3 or more flowers each. Ovary with a few hairs towards the apex. Perianth-tube slightly hairy at the base, scarcely exceeding the bracts; outer segments ovate-elliptical, acute, about ¾ in. long, the inner about 1 line long, narrow-lanceolate but appearing subulate when shrivelled. Staminal column divided to about the middle. Style articulate above the middle.—*P. bicolor*, F. Muell. in several herbaria.

Victoria. Port Phillip, *R. Brown;* near Portland, *Robertson;* Latrobe and Glenelg rivers and Dandenong range, *F. Mueller;* Grampians, *Wilhelmi.*

Tasmania, *Archer.*

S. Australia. Onkaparinga and Lofty ranges, *F. Mueller.*

The name of *longiscapa* was originally proposed by Sims for some specimens of the true *P. glauca*, with a longer scape than usual, which, relying on that character alone, Sweet thought to be the same as the plant introduced from the South coast by Baxter. The latter, however, has the foliage, the smooth outer bracts, the pubescent apex of the ovary, and the shorter perianth-tube of *P. occidentalis*, of which it may prove to be an Eastern variety as doubtfully suggested by R. Brown in his notes.

3. **P. occidentalis,** *R. Br. Prod.* 304. Stems very short, the whole plant glabrous except the ovary and perianth. Leaves rigid, the longest often above 1 ft. long and usually 2 to 3 lines broad. Scapes varying from rather shorter to rather longer than the leaves, dilated and striate under the spike. Outer bracts 1½ in. long or rather more, prominently or rather obscurely keeled, the striæ scarcely or not at all conspicuous, the inner membranous bracts often slightly exceeding the outer and sometimes pubescent on the keel. Flowers usually numerous, rarely only 3, in each spikelet. Perianth-tube and ovary more or less villous, the tube very shortly exceeding the bracts; outer segments often fully 1 in. long, broad and very obtuse, of a rich blue, the inner segments minute, ovate or lanceolate. Staminal column short, the filaments very shortly free; anthers almost lanceolate, spreading. Style articulate near the base of the anthers.—*P. sapphirina*, Lindl. Bot. Reg. 1839, t. 60 (passing frequently in gardens for *P. scricea*).—*Genosiris occidentalis*, F. Muell. Fragm. vii. 31.

W. Australia. King George's Sound and Lucky bay, *R. Brown;* King George's Sound and adjoining districts, *Oldfield, F. Mueller,* and others, and thence to Swan river, *Drummond, Collie.*

Var. *latifolia.* Leaves 3 to 4 lines broad. Flowers very numerous in the spike. Champion bay, *Oldfield.*

Var. ? *angustifolia.* Leaves under 2 lines broad. Possibly a distinct species. *P. tenuispatha* and *P. turfosa*, Endl. in Pl. Preiss. ii. 31.—Swan river, *Preiss, n.* 2338; Murchison river, *Oldfield.*

Var. ? *eriostephana*, F. Muell. Fragm. vii. 32. Inner segments of the perianth subulate.—Cape Arid, *Maxwell.*

P. occidentalis is evidently a variable plant, and appears to be common in West Australia. *P. Diesingii*, Endl. in Pl. Preiss. ii. 30, from Swan river, n. 2356, has the flowers rather large and the staminal-tube rather longer than usual, but I can find no other character to distinguish it from the commonest form. I do not find the spatha articulate on the scape in Preiss's specimen. *P. nana, P. compar, P. flaccida, P. sylvestris*, and *P. montana*, Endl. in Preiss. ii. 30, 31, all from W. Australia, *Preiss*, are unknown to me: all are described as glabrous, and are only distinguished from each other and from *P. occidentalis*, as far as the diagnoses extend, by slight differences in stature, in the proportion of the scape to the foliage, in the prominence of the keel of

the bracts, and in the equality or inequality of the ribs of the leaves, all of which are very variable in the true *P. occidentalis*. No mention is made of the flowers, stamens, or style of any one of them.

4. **P. umbrosa,** *Endl. in Pl. Preiss.* ii. 31. Stems short, with the short scales outside the leaves more numerous than in most species, the whole plant glabrous except the perianth-tube. Leaves usually very long, often above 2 ft., and under 3 lines broad. Spike 2½ in. long, much compressed, the outer bracts acuminate and acutely keeled, smooth or very obscurely striate. Perianth blue, the tube considerably longer than the bracts, slightly silky-pubescent, the outer segments above 1 in. long, the inner ones linear-subulate, often 2 lines long. Staminal-tube rather long and slender, the filaments scarcely free immediately under the anthers. Style showing no articulation in the specimen examined, the limb shortly campanulate below the division into spreading laminæ.—*Genosiris umbrosa*, F. Muell. Fragm. vii. 32.

W. Australia. King George's Sound, *Preiss, n.* 2348, *F. Mueller;* Middle Mount Barren, *Maxwell;* also in *Drummond's* collection.

5. **P. xanthina,** *F. Muell. Fragm.* i. 214. A glabrous plant, with the habit, the long leaves, the long acuminate much compressed acutely keeled and smooth outer bracts, and all the essential floral characters of *P. umbrosa*, but the flowers are said to be yellow, and the buds show none of the blue tint of all the allied species. The perianth-tube in the specimen examined was rather shorter and more hairy than in *P. umbrosa*, and the inner segments not quite so narrow, but I could detect no other difference, and the plant may be a variety only of that species.—*Genosiris xanthina*, F. Muell. Fragm. vii. 33.

W. Australia. Geographe bay, *Oldfield;* Busselton, *Pries* (mixed with *P. occidentalis*).—There are several Irideæ in which the same species appears to include blue-flowered and yellow-flowered varieties.

6. **P. limbata,** *Endl. in Pl. Preiss.* ii. 29. A stout species, with a very short or slightly elongated stem, allied to *P. occidentalis*, but the leaves usually broader and more rigid, ½ to 1½ ft. long, remarkable for their reddish nerve-like keel and inner margin, often woolly on the young leaf but soon becoming glabrous. Scapes rarely above 1 ft. high, much dilated under the spike. Spike rather broad full and many-flowered, about 2 in. long, the outer bracts obscurely striate, usually of a reddish brown as well as the scape, but in some specimens paler coloured. Perianth blue, the tube very silky-villous in the lower part, shortly exceeding the bracts; outer segments apparently nearly 1 in. long, the inner ones very small, linear-lanceolate. Staminal-tube slender, the filaments very shortly free at the apex. Style articulate nearly at the base of the anthers, the stigmatic laminæ stipitate oval-oblong.

W. Australia. King George's Sound and adjoining districts, *Baxter, Drummond, Preiss, n.* 2349, *F. Mueller;* Champion bay, *Oldfield.*

7. **P. juncea,** *Lindl. Swan Riv. App.* 58. Almost stemless and quite glabrous, or the young leaves slightly ciliate. Leaves in clustered

tufts, very narrow-linear, 4 to 8 in. long in the typical form and about ½ line broad, prominently striate, very shortly dilated and sheathing at the base. Scapes slender, as long as or longer than the leaves, quite glabrous. Spike about 1½ in. long, like that of *C. pygmæa* rather narrow, the bracts brown smooth shining and veinless. Perianth quite glabrous, the tube slender, exserted; the structure of the flower apparently like that of *P. pygmæa*, but not seen perfect.—Endl. in Pl. Preiss. ii. 31; *Genosiris juncea*, F. Muell. Fragm. vii. 33.

W. Australia. Swan river, *Drummond, 1st coll., n.* 772, *Preiss, n.* 2352; Vasse river, *Oldfield;* Stirling range, *F. Mueller.*

Var. *elongata.* Leaves nearly 1 ft. long, and scape still longer.—Cape Naturaliste, *Oldfield.*

P. Roei, Endl. in Pl. Preiss. ii. 31, which I have not seen, is probably the same species.

8. **P. Maxwelli,** *F. Muell.* Stems slender but short as in *P. pygmæa.* Leaves strongly ribbed, with a prominent nerve-like margin, slightly hairy on the edges when young, not exceeding 6 in. in the specimens seen and about 1 line broad. Scapes glabrous, nearly as long as the leaves. Spikes about 1 line long, narrow, the outer bracts smooth with very fine scarcely prominent veins as in *P. pygmæa.* Flowers very few (1 or 2 in each spikelet), said to be white. Ovary glabrous or slightly ciliate on the angles. Perianth-tube quite glabrous, about as long as the bracts; outer segments broadly ovate, obtuse, about ½ in. long; the inner ones broadly obovate or orbicular, nearly 1 line long. Staminal tube slender, the filaments scarcely free at the top. Style articulate at the base of the anthers.—*Genosiris Maxwelli,* F. Muell. Fragm. vii. 34.

W. Australia. M'Callum's Inlet, *Maxwell.*

9. **P. pygmæa,** *Lindl. Swan Riv. App.* 58. Stems with a slender erect base as in *P. glabrata* but very short, rarely 2 to 3 in. long below the scape or peduncle, shortly rufous or villous between the leaves or nearly glabrous. Leaves erect, narrow, rigid, with the very fine veins of *P. glabrata*, but only 2 to 4 in. long, more or less silky-hairy especially on the margins when young, usually glabrous on the fruiting specimens. Scapes short or nearly as long as the leaves, clothed with a loose and copious but deciduous wool. Outer bracts 1½ to near 2 in. long, narrow, acute, brown, rather smooth and shining, with very fine scarcely perceptible veins, glabrous or silky-woolly on the keel. Ovary and perianth-tube quite glabrous in the flowering specimens examined, but in others the fruit sometimes slightly hairy; outer segments of the limb obovate, ¾ in. long, the inner ones minute. Staminal column rather long and slender. Style apparently articulate near the base of the anthers.—Endl. in Pl. Preiss. ii. 32; *Genosiris pygmæa,* F. Muell. Fragm. vii. 33.

W. Australia. Swan river, *Drummond, 1st coll. n.* 770; Gordon river, *Preiss, n.* 2352; King George's Sound and adjoining districts, *F. Mueller, Oldfield,* and others; Salt river, *Maxwell.*

10. **P. longifolia,** *R. Br. Prod.* 303. Very near to *P. sericea*, but the leaves scarcely above 1 line broad, sometimes very long, sometimes not much exceeding the spike. Scape 3 to 8 in. long. Spike smaller than in *P. sericea*, the outer bracts often not much above 1 in. long, but in other respects like those of that species drying black, covered when young with a silky wool, and prominently striate when the wool wears off.—*Genosiris longifolia*, F. Muell. Fragm. vii. 35.

N. S. Wales. Grose river, *R. Brown;* Hunter's river, *Oldfield;* Port Jackson or Blue Mountains, *C. Moore, Vicary,* and others; Cape Sturt, *Backhouse.*—Perhaps a variety of *P. sericea.*

11. **P. sericea,** *R. Br. in Bot. Mag.* t. 1041, *Prod.* 303. Stems scarcely any. Leaves radical, long, erect and rigid, rarely above 2 lines broad, the edges very woolly at the base when young. Scapes shorter than the longest leaves, usually about 1 ft. high, silky-woolly towards the end. Spike stout and usually many-flowered, the outer bracts 1½ to near 2 in. long, at first silky-woolly, but the wool often wearing off leaving the bracts prominently striate and usually dark-coloured or black in the dried specimens. Ovary very woolly; the perianth-tube less so or glabrous towards the end, not longer than the outer bracts; outer segments of the limb broadly ovate, almost truncate or emarginate, of a deep violet blue; inner segments small, ovate or lanceolate, sometimes very minute, filaments at first shortly free but at length often separate to the middle or even lower. Style jointed near the top, the laminæ broadly obovate-oblong or nearly orbicular, as in other species closely reflexed in the bud, spreading when the flower is open.—*Genosiris sericea*, F. Muell. Fragm. vii. 35.

Queensland. Port Bowen, *R. Brown;* Moreton island, *F. Mueller;* Wide bay, *Leichhardt;* Glasshouse Mountains, *Byerley;* Dawson river, *Woolls.*

N. S. Wales. Port Jackson, *R. Brown, Sieber, n.* 196, and others; New England, *C. Stuart;* Clarence river, *Wilcox;* Hastings river and Mount Mitchell, *Beckler;* southward to Twofold bay, *F. Mueller.*

Victoria. Genoa river and Mount Wellington, *F. Mueller.*

Var. ? *latifolia.* Leaves fully 3 lines broad.—Blue Mountains, *Fraser.*

P. glabrata, Edw. Bot. Reg. t. 51, seems to represent a glabrous state of *P. sericea,* it is certainly not the *P. glabrata*, R. Br.

12. **P. lanata,** *R. Br. Prod.* 303. Very closely allied to *P. sericea*, and perhaps its western representative. Leaves similarly silky-woolly on the margins only, but the silky-wool of the scapes and bracts is much looser and more copious although very deciduous. Outer bracts dark-coloured rigid and striate as in *P. sericea*, but rarely much above 1 in. long. Flowers usually numerous, the wool of the ovary and of the base of the tube loose and very copious. Perianth-tube not exceeding the bracts; outer segments of the limb very broad and rounded, of a deep blue-purple; inner segments small, obovate or oblong-cuneate, sometimes slightly notched.—Sweet, Fl. Austral. t. 15; *Genosiris lanata*, F. Muell. Fragm. vii. 35.

W. Australia. Lucky bay, *R. Brown,* and probably the same locality, *Baxter.*

Var. *latifolia.* Leaves 3 lines broad.—*P. pannosa*, Endl. in Pl. Preiss. ii. 29.

13. **P. rudis,** *Endl. in Pl. Preiss.* ii. 29. This species is again closely allied to *P. sericea*, but a coarser plant, usually larger in all its parts and the silky-wool not only abundant on the bracts and upper part of the scape and on the margins of the leaves near the base, but the sides also of the leaves are very silky-pubescent near the base, and are surrounded at the base by a dense tuft of long ferruginous hairs proceeding from the rhizome and from the outermost scales. The many-flowered spikes with dark-coloured prominently striate loosely woolly outer bracts the same as in the three preceding species.—*Genosiris rudis*, F. Muell. Fragm. vii. 35.

W. Australia. Swan river, *Drummond, 1st coll., n.* 774, *Preiss, n.* 2347.

14. **P. macrantha,** *Benth.* Stem very short and thick. Leaves above 1 ft. long, about 3 lines broad, neither very rigid nor marginate like those of *P. limbata*, the keel often but not always woolly at the base. Scape flattened, above 1 ft. long in our specimens, silky-pubescent under the spike. Outer bracts about 3 in. long, very slightly hoary or silky, prominently veined, of a pale brown or green. Ovary slightly villous. Perianth-tube glabrous except near the base, shortly exceeding the bracts; outer segments of the limb above 1 in. long. Staminal tube long and slender.

W. Australia. Darling range, *Collie.*

15. **P. glabrata,** *R. Br. Prod.* 304. This species is at once recognised by its rather slender stem of 3 to 6 in. with distichous leaves not so close as in other species and the lower ones very short, the upper ones from 6 in. to above 1 ft. long, rarely above 2 lines broad, finely veined, the keel and sometimes also the inner edge or margins silky-woolly towards the base. Scapes or peduncles one or sometimes two on the stem, rather slender, rarely exceeding the leaves, either quite glabrous as well as the spike, or the upper part silky-hoary with a very short pubescence. Outer bracts 1½ to near 2 in. long, very acute, rather narrow, pale-coloured and often slightly silky-hoary, distinctly striate, with broad scarious margins. Perianth-tube shortly exceeding the bracts, thinly villous at the base as well as the ovary; outer segments of the limb about ¾ in. long in some specimens, above 1 in. in others; inner ones oblong-lanceolate or slightly cuneate, ¾ to 1½ lines long. Staminal column rather long and slender.—Lodd. Bot. Cab. t. 768; *Genosiris glabrata*, F. Muell. Fragm. vii. 35; *P. media*, R. Br. l.c.

Queensland. Shoalwater bay, *R. Brown;* Moreton island, *F. Mueller.*
N. S. Wales. Port Jackson, *R. Brown* and others; Hastings and Clarence rivers, *Beckler;* New England, *C. Stuart;* Newcastle, *Leichhardt.*
Victoria. Genoa Peak, *F. Mueller;* entrance to Snowy river, *C. Walter.*

The species varies much in the length of the stem, in that of the outer bracts, and in the glabrous or pubescent scapes and bracts.—R. Brown's *P. media* only differs from his *glabrata* in the latter respect.

16. **P. Drummondii,** *F. Muell. Herb.* Stems very short. Leaves narrow but very flat, glaucous, often twisted, the thickened nerve-like margins ciliate towards the base when young, the longest 6 to 8 in.

long, about 1 line broad. Scape shorter than the leaves, rigid, compressed. Spikes at least 1½ in. long and rather broad, the outer bracts obtuse, more or less glaucous, rigid, with numerous prominent but fine nerves. Flowers blue, glabrous, but so much injured by worms in the specimens examined that I have been unable to ascertain the structure of the staminal column, the anthers and large reflexed stigmatic lobes quite those of the genus.

W. Australia. Probably Swan river, *Drummond.*

17. **P. inæqualis,** *Benth.* Stems lengthening to 1 or 2 in. and covered with the closely imbricate distichous bases of the leaves, which are rigid, erect, under 1 ft. long, 1 to 1½ lines broad, very strongly striate, and loosely silky-woolly towards the base on both surfaces. Scapes usually nearly as long as the leaves. Outer bracts narrow, rigid, green, and strongly striate, with broad scarious margins, the outermost one about 1 in. long, the next one shorter, inserted higher up, with a prominent base so as to give the spike an unequally gibbous aspect. Flowers few. Ovary somewhat hairy. Perianth-tube glabrous, about as long as the bracts; outer segments of the limb obovate, ⅔ in. long, the inner ones very short, broadly obovate or orbicular. Staminal column elongated, the filaments very shortly free at the apex. Style articulate at or about the middle.

W. Australia. Stokes Inlet, *Maxwell.*

18. **P. graminea,** *Benth.* Stems exceedingly short, clustered on the rhizomes, the outer brown scales and bases of the leaves thickened almost into bulbs. Leaves very narrow, flaccid, prominently veined, the longest 6 to 9 in. long, quite glabrous or hairy at the base when young. Scapes slender, terete, above 1 ft. long, covered at the base with a white cottony wool, glabrous from the middle upwards. Spikes 9 to 10 lines long, the second bract inserted above the lowest, but not so prominent at the base as in *P. inæqualis*, both of them finely ribbed. Flowers 1 or 2 only in each spikelet, quite glabrous, not seen fully open, but in the bud the staminal column is very short, the style articulate at the base of the anthers, the stigmatic lobes dilated but small.

W. Australia, *Drummond, n.* 196 *and 5th coll., n.* 326.

19. **P. babianoides,** *Benth.* Rhizome short with the stem and leaves slightly bulbous at the base as in *P. graminea.* Leaves 1 or 2 only, 3 to 6 in. long, 3 or 4 lines broad in the middle but tapering into a long point and at the base into a long petiole, the lower part of the leaves and the inflorescence densely woolly with very long soft hairs. Scapes mostly but little above 1 in., in one specimen nearly 2 in. long. Outer bract about 1 in. long, narrow, thinly herbaceous or slightly coloured, striate but the veins concealed by the long hairs. Spikelets both single-flowered in the specimen dissected. Ovary very short and densely covered with long hairs, the perianth otherwise glabrous, the tube about as long as the bracts, the three outer seg-

ments of the limb large and obovate, the inner ones small, with subulate points. Filaments very shortly united. Stigmatic laminæ of the style broad, but not reflexed.

W. Australia. Swan river, *Drummond, 1st coll., n.* 760; Hampden, *Clarke.*—The dried specimens have so much the aspect of some of the dwarf species of *Babiana*, that they have been sent as a supposed introduced species of that S. African genus. The structure of the spike and of the flowers is however totally different and in every respect that of *Patersonia*.

3. MORÆA, Linn.

Perianth regular, divided to the ovary into 6 segments spreading almost or quite from the base, all nearly equal or the inner ones rather narrower. Filaments short, free; anthers linear. Style deeply divided into 3 oblong or spathulate petal-like branches, opposite to and arching over the stamens. Capsule oblong ovoid or globular, opening in 3 valves, the pericarp coriaceous or thick.—Herbs with a thick or very short rhizome and fibrous roots. Leaves mostly radical. Stems erect, without any or with one or two leaves, besides the bracts subtending the branches of the inflorescences. Flowers usually rather large, pedicellate, in spikes or clusters, solitary within the subtending bract, each flower opposed to a bract on the same node, the outer bract of the spike usually longer than the subtending one.

The genus is chiefly South African, the only Australian species, as far as known, endemic in Lord Howe's island. The limits of the genus are perhaps somewhat uncertain, and F. Mueller proposes the uniting it with *Iris*. The differences are, however, as to most species, well marked, especially as to the form of the perianth, and it is universally maintained by all those who have specially studied either the Order generally or the South African Flora, a judgment which it is unsafe to set aside, without a thorough revision of all the species of both genera as well as of their allies.

1. **M. Robinsoniana,** *F. Muell. Fragm.* vii. 153. Rhizome very short. Radical leaves attaining 5 or 6 ft. in length and 2 to 4 in. in breadth in the broadest part. Flowering stem 5 or 6 ft. high, with a few long leaves in the lower part, branching into a large panicle, the bracts leafy and 5 or 6 in. long under the lower branches, gradually diminishing, the upper ones broad thin and under 1 in. long. Spikes or clusters few-flowered, the outer bract, opposed to the first flower, usually 1½ in. long and always longer than the subtending one. Flowers shortly pedicellate, the perianth "measuring when fully developed 4 in. across," but smaller in the specimens seen, segments white, elliptical, the outer ones rather broader than the inner. Style-branches oblong-spathulate, obtuse, about ½ in. long. Capsule above 1 in. long, ¾ in. broad, coriaceous, the fruiting pedicel usually as long as the opposed bract.—*Iris Robinsoniana*, F. Muell. l.c.; G. Benn. in Gard. Chron. 1872, 393.

N. S. Wales. Lord Howe's island, *C. Moore, Fullagar.*—Known as the "Wedding Flower." It is the largest species of the genus, the habit is that of the nearly allied *Pardanthus Chinensis*, the flowers nearly those of *Morœa iridioides*.

4. ORTHROSANTHUS, Sweet.

Perianth regular, with a short tube and 6 nearly equal spreading segments. Filaments short, free; anthers oblong, the cells contiguous. Styles or style branches linear, almost filiform, minutely dilated and denticulate at the end, shorter than the anthers and alternate with them. Capsule sessile or nearly so, oblong, 3-angled, opening loculicidally in 3 valves.—Herbs with a perennial short rhizome. Leaves mostly radical, long and grass-like or rigid. Stems erect, bearing 1 or 2 short leaves. Spikes 1- or several-flowered, sessile or pedunculate, solitary or several together within the same sheathing bract, each with 2 outer bracts, the second as well as the inner membranous ones (when present) opposed each to a flower on the same node.

The genus is limited to Southern and Western Australia. It has been generally referred to *Sisyrinchium*, but besides the free stamens and the very different capsules, the inflorescence gives it a very distinct aspect.

Spikes with several (more than 3) flowers, the outer bracts usually brown-scarious at the end. Capsule obtuse.
- Plant glabrous, usually tall. Spikes all sessile or both sessile and pedunculate in the same bract . . . . . 1. *O. multiflorus.*
- Plant low, the leaves woolly on the edge when young. Spikes few, all pedunculate or rarely one sessile . . . . . 2. *O. Muelleri.*

Spikes with 2 or 3 flowers, few and pedunculate. Capsule more or less contracted at the end.
- Leaves 2 to 2½ lines broad. Outer bracts of the spikes white-scarious at the end, capsule shortly and obtusely acuminate 3. *O. laxus.*
- Leaves ½ to ¾ line broad. Outermost bract green to the end. Capsule distinctly beaked . . . . . 4. *O. gramineus.*

Spikes 1-flowered, very numerous, all more or less pedunculate.
- Stem tall. Leaves long . . . . . 5. *O. polystachyus.*

1. **O. multiflorus,** *Sweet, Fl. Austral.* t. 11. Rhizome very short and woody. Leaves chiefly radical or nearly so, flat and grass-like but rigid and striate at the base, ¾ to near 2 ft. long, 1½ to 2 lines broad. Stems 1 to 2 ft. high, bearing only 1 or 2 short leaves below the inflorescence. Inflorescence narrow, 4 to 8 in. long, with lanceolate acuminate bracts. Spikes several-flowered, oblong, about ¾ in. long, one usually sessile within each bract along the main rhachis and accompanied by 1 or 2 others within the same bract, but on rigid peduncles often longer than the subtending bract. Outermost bract of the spike 7 or 8 lines long, striate, with a broad scarious-brown margin; second bract opposed to the first flower, rather longer, brown-scarious at the top; inner ones entirely scarious. Perianth-tube about 1 line long above the ovary; segments of the limb ovate, about ¾ in. long, the outer ones rather narrower than the inner. Ovary contracted and empty at the base and at the top. Capsule ovoid-oblong, 3-angled, nearly as long as the bracts.—Lodd. Bot. Cob. t. 1474; *Sisyrinchium cyaneum*, Lindl. Bot. Reg. t. 1090.

S. Australia. Kangaroo island, *R. Brown, Baxter, F. Mueller;* Portland and Cape Nelson, *Allitt.*

W. Australia. Cape Naturaliste, *Oldfield;* Scott's brook, Thomas river, *Maxwell.*

than the filaments, with 3 linear-subulate spreading branches, stigmatic and minutely toothed or fringed at the end. Capsule ovoid or globular, 3-valved, the pericarp thin.—Herbs with a short often very short leafy base, and grass-like flat leaves almost radical though distichous. Flowering stems erect, simple or branched, with 1 or 2 leaves below the inflorescence. Flowers clustered in the axils of sheathing bracts, each flower on a slender pedicel, opposed to a bract as in other *Irideæ*, but the shortness of the rhachis of the cluster, and the length of the pedicels give the cluster the appearance of an umbel, and occasion some difficulty in tracing its real structure on the dried specimens. The inspection of fresh specimens however prove it very clearly to be in conformity with the rest of the order.

The genus extends to New Zealand and extratropical South America, one of the Australian species apparently the same as a New Zealand one, the other endemic. The genus is reduced by F. Mueller to *Sisyrinchium*, in which Brown had in the first instance placed his three species; but besides the differences indicated in his Addenda and recognised by subsequent observers, the inflorescence gives it so distinct an aspect that I am unable to concur in the union.

Flower-clusters many, paniculate, the flowering-stem 1 to 1½ ft. high.
Perianth-segments about 4 lines . . . . . 1. *L. paniculata.*
Flower-clusters few or solitary, the flowering-stem under 1 ft.
Perianth-segments 2 to 3 lines long . . . . . 2. *L. pulchella.*

1. **L. paniculata,** *Spreng. Syst.* i. 168. Rhizome and leafy base of the stem very short. Leaves almost radical, grass-like, flaccid, ¾ to 1½ ft. long and mostly about 3 lines broad. Stem 1 to 1½ ft. high, with sometimes a short leaf below the inflorescence. Panicle oblong loose and irregular, occupying often half the stem, glabrous as well as the whole plant or the pedicels slightly glandular-pubescent. Bracts membranous-scarious, the lower ones rather long and acuminate, those subtending the flowers 3 to 4 lines long, ovate or ovate-lanceolate, obtuse or acute. Flower-clusters umbel-like, the pedicels 3 to 4 lines long when in flower, at least twice as long under the fruits. Ovary obovoid, about 1¼ lines long under the flower. Perianth-segments about 4 lines long, ovate, spreading, the inner ones larger than the outer, but not so much so as in the non-Australian species. Filaments dilated at the base but not united. Style column very short, with 3 linear-subulate spreading branches, minutely fringed at the end. Capsule ovoid-globular, 3 to 4 lines diameter.—*Sisyrinchium paniculatum*, R. Br. Prod. 305; F. Muell. Fragm. vii. 91; *Renealmia paniculata*, R. Br. Prod. Addenda; *Nematostigma paniculatum*, Dietr. Sp. Pl. ii. 510.

N. S. Wales. Port Jackson and Hunter's river, *R. Brown;* Blue Mountains, *Woolls, Miss Atkinson;* northward to Hastings river, *Beckler;* New England, *C. Stuart;* southward to Illawarra, *A. Cunningham;* Twofold bay, *F. Mueller;* Cape Howe, *C. Walter.*

Victoria. Snowy and Genoa rivers, *F. Mueller.*

2. **L. pulchella,** *Spreng. Syst.* i. 169. A much smaller plant than *L. paniculata*, the leafy base of the stems more slender but often elongated to from 1 to 3 in. and slightly branched. Leaves rarely 6 in. long and 2 to 3 lines broad, often not above half that size. Scape or

peduncle from under 6 in. to nearly 1 ft. long, often with a single leaf below the inflorescence which is more simple than in *L. paniculata*, usually a single terminal cluster and one or two lower down on the stem. Rhachis of the cluster often somewhat elongated, and sometimes a pedunculate cluster from the axil of the same bract. Bracts membranous, striate, acuminate, the subtending ones ½ to ¾ in. long, the inner ones smaller. Pedicels filiform, ¾ to 1 in. long, often glandular-pubescent as well as the ovaries. Ovary globular, about 1 line long at the time of flowering. Perianth-segments narrower than in *L. paniculata* and still more nearly equal, varying from 2 to 3 lines long. Filaments filiform, very shortly dilated at the base. Style of *L. paniculata*. Capsule about 2 lines diameter, opening to the base in three valves which often retain the seeds long after they open.—*Sisyrinchium pulchellum*, R. Br. Prod. 305; F. Muell. Fragm. vii. 92; *Renealmia pulchella*, R. Br. Prod. Addenda; *Nematostigma pulchellum*, Dietr. Spec. Pl. ii. 510; *Libertia Laurencii*, Hook. f. Fl. Tasm. ii. 34, t. 129; *L. micrantha*, A. Cunn. in Hook. f. Fl. N. Zeal. i. 252.

N. S. Wales. Grose river, *R. Brown;* Blue Mountains, *C. Moore;* Port Jackson, *Woolls*.

Victoria. Upper Targil and Upper Latrobe rivers, Mount Baw-Baw, sources of the Yarra, &c., *F. Mueller*.

Tasmania. Abundant in various parts of the island, ascending to 4000 ft., *J. D. Hooker*, and others.

The species is also in New Zealand. The common Tasmanian form described by Hooker as *L. Laurencii*, has rather large flowers, the perianth-segments about 3 lines long; but some Tasmanian specimens, especially from Gordon river, *Milligan*, Brown's own, and some of the New Zealand ones have them remarkably small, the perianth-segments scarcely 2 lines long. The majority of the New South Wales and New Zealand ones are more or less intermediate in size.

7. CAMPYNEMA, Labill.

Perianth regular, divided to the ovary into 6 nearly equal segments spreading from the base. Stamens 6, the filaments free; anthers opening outwards, but sagittate with short obtuse auricles at the base. Styles 3, distinct from the base, rather thick, obtuse and stigmatic at the end, at first connivent, at length spreading. Capsule oblong or turbinate, prominently and obtusely 3-angled. Seeds more or less flattened or angular, with a spongy testa.—Perennial herbs, with a short rhizome, and a single or rarely two leaves radical or nearly so. Stem single, with 1 to 4 pedunculate flowers, centrifugal in their development, at first terminal but becoming opposed to a linear bract by the development of its axillary shoot.

The genus is endemic in Tasmania, with exceptional characters, to whatever Order it may be ascribed. Brown, judging from Labillardière's figure and description, placed it amongst anomalous genera at the end of *Melanthaceæ*, from which it differs essentially in its strictly inferior ovary and capsule, a character to which less importance was then attached than has since been attributed to it. Lindley enumerated it amongst *Amaryllideæ*, from which Kunth appears to have advisedly expunged it, as it appears in his index, but not in the text of his fifth volume. F. Mueller refers it without hesi-

tation to *Hypoxideæ*, although the seeds have not the crustaceous testa nor the projecting hooked hilum peculiar to that suborder or tribe. It differs from all the above groups in two important characters—the anthers opening outwards, and the centrifugal inflorescence, in both of which it agrees with *Irideæ*, amongst which it appears to me to constitute an exceptionally hexandrous genus.

Plant of ¼ to 1 ft., with a narrow linear or linear-lanceolate leaf . . 1. *C. lineare.*
Dwarf plant, with usually 2 oblong lanceolate short leaves . . . . 2. *C. pygmæa.*

1. **C. lineare,** *Labill. Pl. Nov. Holl.* i. 93, t. 121. Rhizome very short, with rather thick fibrous roots. Stems slender, varying from 3 or 4 in. to at least 1 ft. high, with a single linear or linear-lanceolate leaf of 2 to 4 in. and sometimes a small one outside of it almost reduced to its scarious sheath, and often 1 or 2 small linear leaves or bracts higher up. Flowers either solitary and terminal or 2 to 4, the lateral ones opening later on short or long peduncles, the terminal one becoming opposed to a linear bract. Perianth-segments ovate or ovate-lanceolate, acute or mucronate, contracted at the base, about 3 lines long. Filaments inserted at the base of the segments and about half as long, at length recurved; anthers ovate-oblong. Styles quite distinct and rather broad at the base, the tips long cohering but at length recurved. Ovary oblong-turbinate or almost linear. Capsule when fully developed ½ in. long, tapering towards the base.—Hook. f. Fl. Tasm. ii. 48; *Campylonema lineare,* Schultz, Syst. vii. 1507.

Tasmania. Rocky Cape, Macquarrie Harbour, Recherche bay, &c., ascending to 4000 ft., *Gunn, Milligan;* Southport, *C. Stuart.*

2. **C. pygmæum,** *F. Muell.* A small stout plant of 1 to 1½ in. Leaves usually 2, oblong-lanceolate, obtuse, recurved spreading, ½ to ¾ in. long and 2 to 3 lines broad. Flowers 1 or rarely 2 on a stem not exceeding the leaves. Ovary shortly turbinate but the structure the same as in *C. lineare,* of which F. Mueller thinks it may be an alpine variety.

Tasmania. Summit of Mount Lapeyrouse in the tufts of *Donatia, Oldfield.*

Order CXXIII. AMARYLLIDEÆ.

Flowers hermaphrodite, regular or oblique. Perianth superior, with or without a distinct tube, the limb of 6 coloured or petal-like segments, all equal or rarely the 3 inner ones rather larger or smaller. Stamens 6, inserted at the orifice of the tube or base of the segments or rarely 3 only opposite the inner segments, or in a very few genera not Australian more than 6; filaments free or united at the base into a short tube or corona; anthers versatile or rarely attached at the base, with 2 parallel cells opening inwards or laterally. Style single, with 3 adnate stigmas, usually very small and confluent on the obtuse end, rarely oblong or linear and connate or diverging into stigmatic branches. Ovary inferior or rarely half-superior, 3-celled with several usually numerous rarely only 1 or 2 ovules in each cell, amphitropous anatropous or

rarely orthotropous, attached to an axile placenta, or rarely the ovary reduced to 1 cell by the abortion of 2 carpels or by the obliteration of the dissepiment. Fruit usually a capsule, opening loculicidally either at the free apex only or to the base in 3 valves, rarely succulent and indehiscent, or bursting irregularly. Seeds albuminous, with a small or linear embryo, the radicle near to or more or less distant from the hilum.—Herbs with a perennial short or tuberous or creeping rhizome, or bulbous base. Leaves mostly radical, or nearly so, the sheathing base either distichous or imbricate or bulbous, the lamina entire, usually narrow with contiguous parallel veins, either laterally compressed (equitant), terete, channelled or flat, rarely broad with distant primary veins and transverse veinlets. Scapes or flowering stems terminal, leafless or with one or more sheathing bracts or leaves much smaller than the radical ones, with a single terminal flower or more frequently with several or many flowers either in a terminal umbel surrounded by 2 or more membranous or coloured bracts, or few in a terminal raceme or many in a terminal thyrsus or panicle, each branch and each flower subtended by a bract, the inflorescence usually centripetal. Perianths glabrous hairy or woolly in the Australian genera, most frequently white, yellow, or red, rarely purple, never blue.

The Order is generally distributed over the warmer and temperate regions of the globe, most abundant in dry, sunny countries. Of the thirteen Australian genera, three range over tropical Asia and tropical and Southern Africa, two of them sparingly represented also in America, a fourth (*Eurycles*) extends to the Archipelago, the remaining nine are endemic, and six of them limited to West Australia. The several tribes here distinguished are usually considered as so many independent Orders, or at any rate as referrible to three distinct Orders—*Hæmodoraceæ*, *Hypoxideæ*, and *Amaryllideæ*; but although these subordinate groups are in most respects distinct, it appears to me that it is only by their union in one general Order that we can obtain a well-defined group, of the same grade as *Irideæ*, *Burmanniaceæ*, *Orchideæ*, *Scitamineæ*, and *Hydrocharideæ*, all of them clearly marked out by definite and important characters. It is generally admitted that the above suborders here united under *Amaryllideæ*, agree in the most important characters derived from the flower and seed, differing from *Hydrocharideæ*, *Orchideæ*, and *Burmanniaceæ* in their albuminous seeds, from *Scitamineæ* and *Orchideæ* in their regular (or only oblique) flowers, from *Irideæ* and *Burmanniaceæ* in their centripetal not centrifugal inflorescence and in their stamens, from *Taccaceæ* and the majority of *Orchideæ* and *Burmanniaceæ* in their axile placentum, from *Dioscorideæ* in their hermaphrodite flower, and in all cases there are other characters either less constant or of minor importance.

Amongst these Amaryllideous suborders, *Hæmodoraceæ* have been supposed to be distinctly characterized by equitant leaves and furfuraceous-tomentose flowers, but *Hæmodorum* and *Phlebocarya* are perfectly glabrous, the leaves are terete or channelled above in some species, and never equitant in *Velloziеæ*, now generally included in *Hæmodoraceæ*. Herbert, who unites the greater portion of *Hæmodoraceæ* with *Amaryllideæ*, would exclude *Hæmodorum* itself as being triandrous; but although *Irideæ* are almost universally triandrous and *Amaryllideæ* hexandrous, this number of stamens, single or double, if relied upon absolutely, separates the Orders much less naturally than the difference in inflorescence wherever it can be ascertained, accompanied as it is by an apparently constant difference in the anthers. When the scapes are uniflorous, the number of stamens or some other of the above mentioned characters may be called in aid. Taking therefore the *Amaryllideæ* as a whole as one Order, it would include besides the five tribes or suborders here enumerated, which are all common to the New as well as the Old World, the *Velloziеæ*, which are confined to America, except a single African species and the *Alstrœmieriеæ*, all American, in which however the secondary inflorescence appears to be centrifugal.

Tribe 1. **Hæmodoreæ.**—*Perianth glabrous, divided to the ovary into distinctly 2-seriate segments. Stigmas very small. Leaves laterally flattened or terete. Inflorescence compound or rarely simply racemose.*

Stamens 3. Ovules 2 in each cell. Capsule almost superior, 3-dymous . . . . . 1. Hæmodorum.
Stamens 6. Ovules 1 to each carpel, the ovary often 1-celled. Nut inferior, indehiscent, 1-seeded. Flowers small . . . . . 2. Phlebocarya.

Tribe 2. **Conostyleæ.**—*Perianth plumose-woolly or tomentose outside, the tube usually continued above the ovary, the lobes apparently 1-seriate. Stigmas very small. Leaves laterally flattened or terete. Inflorescence compound simply racemose or capitate, rarely 1-florous. Stamens 6.*

Filaments broad, produced into 2 erect flat appendages above the insertion of the anthers. Ovules many. Flowers solitary or few in a head or small cyme . . . . . 3. Tribonanthes.
Filaments inappendiculate.
Perianth campanulate or rarely tubular. Ovules several, usually many in each cell, not in rows. Capsule opening in 3 valves at the apex. Flowers in heads or cymes, rarely solitary . . 4. Conostylis.
Perianth tubular, the limb equal. Ovules several, in 2 rows in each cell, the ovary adnate at the angles only. Flowers in short unilateral racemes on a branching scape . . . . . 5. Blancoa.
Perianth long, tubular, the limb very oblique, more split on the lower side. Flowers in unilateral racemes or spikes on a simple or dichotomous scape or peduncle.
Ovules many or rarely 2 to 4 in each cell. Capsule 3-valved at the apex. Wool of the perianth red green or yellow . . 6. Anigozanthos.
Ovules 1 in each cell. Seeds separating in 3 cocci, leaving the thick persistent septa. Wool of the perianth nearly black . . . . . 7. Macropodia.

Tribe 3. **Hypoxideæ.**—*Perianth hairy or rarely glabrous. Stigmas or stigmatic lobes large, free or connate. Ovules many, in 2 rows in each cell. Seeds with a crustaceous testa, the hilum produced into a hooked beak. Leaves horizontally flattened, channelled or terete. Flowers in a simple spike or raceme or solitary.*

Flowers sessile within sheathing or imbricate bracts in a dense spike. Perianth usually with a long tube . . . . . 8. Curculigo.
Flowers solitary or few in a loose pedunculate raceme. Perianth divided to the ovary into spreading segments . . . . . 9. Hypoxis.

Tribe 4. **Agaveæ.**—*Perianth glabrous. Stigmas small. Tall often woody plants, not bulbous. Leaves horizontally flat, channelled (or terete?). Inflorescence compound.*

Radical leaves very numerous. Flowers large, red, in a terminal compound head or thyrsus . . . . . 10. Doryanthes.

Tribe 5. **Euamaryllideæ.**—*Perianth glabrous. Stigmas small. Bulbous plants. Leaves horizontally flat, channelled or terete. Flowers umbellate or rarely solitary on leafless scapes.*

No corona. Flowers large. Ovules several, in 2 rows in each cell 11. Crinum.
Filaments connected below the middle by a corona.
Ovary 3-celled, with 2 ovules in each cell. Leaves broad, with distant primary veins . . . . . 12. Eurycles.
Ovary 1-celled, with 2 ovules. Leaves narrow with close veins, or broad with distant primary veins . . . . . 13. Calostemma.

Tribe 1. Hæmodoreæ.—Rhizome or base of the stem short and thick, emitting fibrous roots and sometimes covered with the brown sheathing bases of old leaves so as to resemble bulbs. Leaves mostly radical, with distichous sheathing bases and long laterally flattened or terete laminæ. Stems often with a few short leaves. Flowers glabrous, in cymes or panicles, rarely reduced to a simple raceme. Perianth divided to the ovary into 6 segments in 2 rows. Ovules 1 or 2 to each carpel or cell.

1. HÆMODORUM, Sm.

Perianth persistent, divided to the ovary into 6 segments, all nearly equal or the outer ones shorter. Stamens 3, inserted at the base of the inner segments, which in the open flower are usually convolute round the filaments at the base. Ovary entirely or almost entirely inferior, the broad summit either flat or with 3 slight protuberances, 3-celled, with 2 ovules in each cell. Style simple, obtuse, entire or obscurely 3-furrowed at the stigmatic end. Capsule half or almost entirely superior, the free part 3-dymous and opening in 3 loculicidal slits. Seeds ovate, flat, with a wing-like margin, peltately attached to a prominent placenta.—Erect glabrous herbs, the base of the stem or rhizome sometimes thickened and enclosed in the persistent sheathing base of the leaves so as to resemble narrow bulbs, the fibrous roots sometimes very thick and spongy and often red. Leaves sheathing and equitant at the base, the lamina laterally flattened or terete, the lower ones sometimes very long, the upper ones few and short. Flowers black, red, of a livid green, or perhaps in some of the small flowered-species yellow, usually fragrant, in clusters compound heads cymes loose panicles or interrupted spikes, with a bract under each branch or pedicel, and usually 2 on each pedicel even when very short.

The genus is limited to Australia.

Flowers in dense globular or oblong heads on dwarf stems (under 6 in.). Leaves nearly terete.
Leaves thick and short. Flower-heads solitary. Perianth-segments nearly equal. Tasmanian species . . . . . 1. *H. distichophyllum.*
Leaves slender and long. Flower-heads oblong, usually two. Outer perianth-segments shorter. Tropical species . . 2. *H. brevicaule.*
Flowers (black), above 3 lines long, in clusters of 2 to 4 or singly pedicellate. Leaves very narrow or terete. Western species.
Bracts under and on the pedicels narrow, not scarious.
Flowers singly pedicellate in a dichotomous panicle . . 3. *H. sparsiflorum.*
Flowers usually two together along the rhachis of a single interrupted spike.
Stout plant of 2 to 3 ft. Outer perianth-segments more than ¾ the length of the inner . . . . . 4. *H. spicatum.*
Slender plant under 1 ft., oblong-bulbous at the base. Outer perianth-segments ½ as long as the inner . . 4. *H. brevisepalum.*
Bracts under and on the pedicels broad with scarious margins.
Tall plants. Bracts at least ¾ as long as the flowers. Flower-clusters several along the branches of an erect panicle . . . . . 6. *H. paniculatum.*

Flower-clusters singly terminating the branches of a spreading panicle . . . . . 7. *H. laxum.*
Slender plant. Bracts less than ½ as long as the flowers.
Flower-clusters solitary or few on long peduncles . . 8. *H. simplex.*
Flowers (dark red, livid or black) above 3 lines long, very numerous, in dense terminal corymbose cymes. Leaves flat or terete.
Perianth-segments nearly equal.
Flowers (black) usually in 2 or more distinctly pedunculate compact cymes or heads. Western species . . 9. *H. simulans.*
Flowers (greenish purple) forming one compact compound terminal cyme. Eastern species.
Leaves flat, 2 to 3 lines broad . . . . . 10. *H. planifolium.*
Leaves slender, terete . . . . . 11. *H. teretifolium.*
Outer perianth-segments considerably shorter than the inner.
Flowers (red?) in a compact compound terminal cyme.
Tropical species . . . . . 12. *H. coccineum.*
Flowers about 2 lines long, green or yellow, in panicles or spikes, the inner segments broader but not longer than the outer. Tropical or Eastern subtropical species.
Leaves long, flat, flaccid. Flowers densely cymose in a corymbose panicle . . . . . 13. *H. subvirens.*
Leaves flat, rigid, and glaucous. Flowers loosely racemose along the branches of a spreading panicle . . . . . 14. *H. ensifolium.*
Leaves slender, terete.
Flowers very shortly pedicellate along the branches of a spreading panicle . . . . . 15. *H. parviflorum.*
Flowers nearly sessile along a simple rhachis . . . . 16. *H. leptostachyum.*
Flowers singly pedicellate in a dichotomous panicle . . 17. *H. tenuifolium.*

1. **H. distichophyllum,** *Hook. Ic. Pl.* t. 866. A dwarf compact species, not exceeding 4 in., the lower part occupied by the broad distichous leaf-sheaths; laminæ of the leaves thick, not much compressed, rigid, 2 to 3 in. long and not above 2 lines broad. Stems with 3 or 4 loose sheathing bracts of ½ to ¾ in. Flowers not many in a compact terminal head scarcely ¾ in. diameter. Perianth shortly adnate at the base, the segments oblong or lanceolate, about 2 lines long and all nearly equal. Filaments as long as the perianth, with small anthers. Capsule almost entirely superior, deeply tridymous.—Hook. f. Fl. Tasm. ii. 35.

Tasmania. Heathy ground near Port Macquarrie, *Milligan.*

2. **H. brevicaule,** *F. Muell. Fragm.* i. 64. Stems not above 6 in. high, covered at the base with the broad sheathing bases of the leaves sometimes splitting into fibres. Radical leaves with a terete slender lamina, sometimes 1 ft. long or even more; leaves or bracts under the inflorescence 1 or 2, lanceolate, ½ to 1 in. long. Flowers drying black, in one two or three dense oblong heads of ¾ to 1 in., the bracts within the head small. Inner perianth-segments in some specimens a little above 2 lines, in others nearly 3 lines long, narrow and obtuse, the outer ones ¼ to ⅓ shorter. Filaments thick, nearly as long as the perianth; anthers rather short.

N. Australia. Sea range and dry plains towards M'Adam range, *F. Mueller;* Liverpool river, *Gulliver.*

3. **H. sparsiflorum,** *F. Muell. Fragm.* vii. 117. A rather tall species, with the habit and foliage of *H. laxum* and a similarly divaricately branched panicle, but the flowers smaller, on pedicels longer than the perianth, the bracts at the base of and on the pedicels linear or lanceolate, 2 to 3 lines long, without scarious margins. Perianth-segments about 3½ lines long, apparently black, very narrow, shortly dilated at the base, the outer ones rather shorter than the inner. Capsule apparently much smaller than in *H. laxum*, but not seen ripe.

W. Australia. *Drummond, n.* 58.

4. **H. spicatum,** *R. Br. Prod.* 300. Stems simple, attaining 2 to 3 ft., covered at the shortly thickened base by the short broad sheathing bases of the leaves, but loosely so and not so bulb-like (in the specimens seen) as in *H. brevisepalum* and *H. simplex*. Leaves from their short sheathing base tapering into a long very narrow linear-subulate lamina. Flowers black, mostly in pairs along a simple rhachis of 6 in. to 1 ft., each pair subtended by an ovate-lanceolate acuminate bract of 2 to 3 lines, with a small lanceolate bract on each pedicel, the pedicels always much shorter than the perianth. Inner perianth-segments linear or linear-lanceolate, about 5 lines long, the outer ones usually about 1 line shorter, more subulate, but dilated at the base. Filaments inserted near the base of the inner segments, enclosed in but free from them. Anthers oblong, rather short. Capsule about 4 lines broad.—Endl. Iconogr. t. 98, and in Pl. Preiss. ii. 15; *H. edule*, Endl. in Pl. Preiss. ii. 15.

W. Australia. Lucky bay, *R. Brown;* King George's Sound and adjoining districts, *Preiss, n.* 1423, *Oldfield,* and others; Swan river, *Preiss, n.* 1421; Murchison river, *Oldfield.*—The roots are said to be eaten by the natives.

5. **H. brevisepalum,** *Benth.* Stems simple, rather slender, under 1 ft. high and enclosed at the base in the closely-pressed membranous sheathing bases of old leaves, forming an oblong bulb as in *H. simplex*. Leaves tapering into linear-terete laminæ, usually longer than the stem. Flowers in distant pairs along a simple rhachis as in *H. spicatum*, but fewer, as large or rather larger, and the outer segments broadly ovate, very shortly acuminate and only half as long as the inner ones.

W. Australia. Swan river, *Drummond, 1st coll. n.* 743.

6. **H. paniculatum,** *Lindl. Swan Riv. App.* 44. Very near *H. laxum* and perhaps a variety only. It appears to be a still taller plant, the leaves rather flatter and not quite so rigid. Panicle with fewer more erect branches, the flowers in clusters or cymes of 2 to 4 along the branches and not all terminal. Bracts larger, more scarious on the margins. Perianths rather larger, the outer segments rather shorter and considerably broader than the inner ones.—Endl. in Pl. Preiss. ii. 15? partly.

W. Australia. Swan river, *Drummond, 1st. coll. n.* 742; Murchison river, *Oldfield.*

H. strictum, Endl. in Pl. Preiss. ii. 15, from Wellington district, probably belongs to *H. paniculatum*, as well as Preiss's n. 1425, from Victoria district.

7. **H. laxum,** *R. Br. Prod.* 300. Stems rigid, 1½ to 2 ft. high. Lower leaves 10 in. to above 1 ft. long, rigid, striate, thick or sometimes almost terete, 1 to 1½ lines broad or sometimes nearly 2 lines at the base before they open into a long sheath, those of the stem also gradually dilated into long sheaths. Flowers on short pedicels, usually 2 to 4 together at the ends of the dichotomous branches of a very loose corymbose panicle. Bracts at the base of the branches small, those under and upon the pedicels ovate or oblong, at least ⅔ as long as the flowers, with scarious margins. Perianth black, rather above 4 lines long, the outer segments rather shorter than the inner ones, with broad bases. Capsule nearly ½ in. broad.

W. Australia. King George's Sound, *R. Brown;* Perongerup, *F. Mueller;* Vasse and Blackwood rivers, *Oldfield.*

8. **H. simplex,** *Lindl. Swan Riv. App.* 44. Stem rather slender, 1 to 1½ ft. high, not much thickened at the base but covered with the broad membranous sheathing bases of the lower leaves, so as to form a kind of narrow oblong bulb. Leaves very narrow, linear-terete, the radical ones sometimes short sometimes 6 to 8 in. long; those of the stem few, abruptly dilated into short sheaths. Flowers "blackish," few together in compact heads or cymes which are either solitary or 2 together on short peduncles at the end of the stem, or sometimes another on a longer peduncle from the axil of a bract lower down. Bracts under and upon the very short pedicels broadly ovate or orbicular, not half so long as the flower, with scarious margins. Perianth about 4 lines long, the outer segments rather shorter than the inner, very broad at the base, the inner much convolute. Capsule 3 to 4 lines broad, but not quite ripe in the specimens seen.

W. Australia. Swan river, *Drummond, 1st. coll.*; Kalgan river, *Oldfield;* Lake Muir, *Muir.*

H. polycephalum, Endl. in Pl. in Preiss. ii. 16, from Swan river, is probably founded on specimens of this species with more than one head of flowers, those which Lindley described having had mostly only a single head.

9. **H. simulans,** *F. Muell. Fragm.* vii. 117. A stout rigid species, one of Drummond's specimens above 4 ft. high. Leaves flat, rigid, striate, the lower ones sometimes 1 ft. long and ¾ in. broad, but in other specimens not above 2 lines broad, the upper ones short and broad. Flowers "black and fragrant" rather numerous, in compact cymes at the end of the stem and of 1 to 3 long peduncles. Bracts linear or narrow-lanceolate, without scarious margins. Perianth about ½ in. long, the segments all narrow and nearly equal, shortly dilated at the base. Filaments not longer than the anthers, which sometimes do not reach to above half the length of the perianth, although sometimes nearly its length.

W. Australia. Swan river, *Drummond, 1st coll., also n.* 310; Murchison river, *Oldfield.*

This was considered by Lindley as the same as the Eastern *H. planifolium,* and indeed is scarcely to be distinguished from it except by the usually broader more promi-

nently veined leaves, and by the flowers in more compact heads or cymes, but usually 2 or more such heads on unequal peduncles, instead of forming together only one terminal compact corymb.

10. **H. planifolium,** *R. Br. Prod.* 300. Stems from a thick base 2 to 3 ft. high, scarcely branched below the inflorescence. Lower or radical leaves long, grass-like, flat, from under 2 lines to nearly 3 lines broad, the upper ones few and short. Flowers numerous, of a livid purple or greenish at the base, in short forked racemes or cymes collected in a compact more or less corymbose panicle, but usually looser than in *H. coccineum*. Bracts narrow, subulate-acuminate, usually longer than the pedicel. Perianth-segments linear or linear-lanceolate, obtuse in the bud, but appearing acuminate when open the margins being involute, about 5 lines long, the outer ones scarcely shorter than the inner. Stamens much shorter than the perianth; anthers linear, about as long as the filaments. Ovary wholly inferior, the summit showing only 3 slight protuberances. Capsule more than half superior, tridymous, 4 to 5 lines broad.—Bot. Mag. t. 1610.

N. S. Wales. Port Jackson to the Blue Mountains, *R. Brown, Sieber, n.* 203, and many others; Hastings and Clarence rivers, *Beckler;* Clarence river, *Wilcox;* New England, *Leichhardt, C. Stuart.*

The species varies in some manner in inflorescence, the panicle compact or spreading, the ultimate racemes few and long or numerous and short.

11. **H. teretifolium,** *R. Br. Prod.* 300. Stature inflorescence and flowers precisely those of *H. planifolium*, but the leaves from a short sheathing base very long, slender, terete, or nearly so, about ½ line broad, as in *H. tenuifolium*. Flowers very numerous in a compact but not very dense compound corymbose panicle, black when dry as in the allied species. Perianth-segments narrow and about 5 lines long, the outer ones scarcely shorter than the inner as in *H. planifolium*.

N. S. Wales. Port Jackson, *R. Brown;* Illawarra, *A. Cunningham*, an imperfect specimen, but apparently the same as Brown's plant.

12. **H. coccineum,** *R. Br. Prod.* 300. Stems from a thick base 2 to 3 ft. high, not branched below the inflorescence. Leaves at the base of the stem 1 to 2 ft. long, flat, 2 to 3 lines broad, very finely striate, the upper ones few and short. Flowers numerous "red" but drying black, in dense cymes forming a compact terminal compound corymbose panicle. Perianth-segments linear, the outer ones thickened and dilated at the base, 3 lines long, the inner ones rather narrower and ⅓ longer. Stamens a little shorter or longer than the perianth, the anthers much shorter than the filaments. Ovary wholly inferior. Capsule half superior, about 4 or 5 lines broad, conspicuously 3-dymous or didymous by abortion of one cell.

N. Australia. Islands of the Gulf of Carpentaria, *R. Brown, Henne, Gulliver;* Upper Victoria river, *F. Mueller.*

Queensland. Cape York, *M'Gillivray, Daemel, Veitch;* Albany island, *F. Mueller;* Fitzroy island, and Mount Elliott, *Fitzalan;* Rockingham bay, very abundant, *Dallachy;* Cape river and Glenella creek, *Bowman.*

13. **H. subvirens,** *F. Muell. Fragm.* i. 63. A tall species. Lower or radicle leaves longer and more flaccid than in *H. coccineum*, 3 to 4 lines broad. Flowers numerous, in a rather looser and more spreading corymbose panicle than in that species. Bracts lanceolate, acuminate, nearly as long as the flowers. Perianth scarcely above 2 lines long, greenish according to F. Mueller's notes, somewhat yellowish when dry, the outer segments narrow-lanceolate, acute, the inner ones rather broader and more obtuse but not longer.

N. Australia. Rocky hills, Upper Victoria river, *F. Mueller*, a single specimen preserved in Herb. Hooker, represented in Herb. F. Mueller by one of *H. coccineum*, which, though resembling it in habit, has very different flowers.

14. **H. ensifolium,** *F. Muell. Fragm.* i. 64. A rigid glaucous species, 2 ft. high or more. Leaves rigid, with long open sheaths, the lamina flat, obtuse, 2 to 3 lines broad and about 1 ft. long in the radical leaves, those of the stem short. Panicle broad loose and divaricate, the ultimate branches loosely racemose, with very small bracts. Pedicels usually about as long as the flowers. Perianth-segments oblong-lanceolate, obtuse, scarcely 2 lines long, the outer ones quite as long as the inner. Stamens about as long as the perianth. Capsule nearly ½ in. broad.

N. Australia. M'Adam range, *F. Mueller;* Port Darwin, *Schultz, n.* 522.

16. **H. parviflorum,** *Benth.* Stems slender, 1½ to 2 ft. high. Leaves with rather long sheathing bases, the lamina slender and terete like that of *H. teretifolium*, the lower ones sometimes 1 ft. long, the upper ones few and short. Panicle consisting of few, sometimes only 2 or 3 slender spreading branches, along which the flowers are racemose, on pedicels usually shorter than the flower. Perianth-segments about 1½ lines long, narrow-oblong, obtuse, the inner ones not longer than the outer. Stamens shorter than the perianth. Capsule although nearly ripe not above 3 lines diameter.

N. Australia Brunswick bay, N.W. coast, *A. Cunningham;* Port Darwin, *Schultz, n.* 723.

16. **H. leptostachyum,** *Benth.* Base of the stem thickly covered in our specimens with the rigid fibrous remains of old sheaths. Stem quite simple or branching below the middle, slender, 1 to 1½ ft. high. Leaves short, the lamina very slender and terete but rigid. Flowers sessile or nearly so within very small obtuse bracts along a long slender simple rhachis. Perianth-segments broadly ovate, very obtuse, nearly 2 lines long, the inner ones not longer than the outer. Stamens about as long as the perianth-segments. Fruit apparently like that of *H. parviflorum.*

N. Australia. Port Darwin, *Schultz, n.* 659.

17. **H tenuifolium,** *A. Cunn. Herb.* Stems 1½ to 2 ft. high. Radical and lower leaves with a rather broad short sheathing base, very long, slender and almost terete, about ½ line broad. Panicle loosely divari-

cate, the ultimate 1-flowered branches much longer than the flower, with small distant bracts, and not at all assuming the racemose character. Perianth-segments broadly ovate, very obtuse, all nearly the same length, the outer almost membranous with a broad base, the inner ones of a thicker consistence, nearly orbicular, contracted at the base and of a deeper colour when dry. Filaments attaining nearly the length of the perianth; anthers ovate, usually slightly exserted.

Queensland. Peat and boggy ground, shores of Moreton bay and island, *A. Cunningham, F. Mueller.*
N. S. Wales. Duval, *Leichhardt.*

2. PHLEBOCARYA, R. Br.

Perianth persistent, divided to the ovary into 6 nearly equal segments. Stamens 6; anthers erect, on short filaments, inserted at the base of the segments. Ovary inferior, more or less 3-celled when very young, but often 1-celled at the time of flowering by the obliteration of the dissepiments, placenta central, with 3 ascending ovules (1 to each cell). Style simple, obtuse, entire or obscurely 3-furrowed at the stigmatic end. Fruit wholly inferior, nut-like and indehiscent, containing a single erect seed. Testa membranous; albumen fleshy.—Herbs usually more or less ciliate with long hairs. Leaves long narrow and grass-like. Flowering stems slender, shorter than the leaves, usually forked or dichotomously divided, with a compact or loose cyme of small flowers at the end of each branch.

The genus is limited to West Australia.

Leaves flat, ciliate on the margin only, and sometimes almost without cilia. Anther-connective not longer than the cells . . . 1. *P. ciliata.*
Leaves flat, hairy on the whole surface. Anther-connective shortly produced beyond the cells . . . . . 2. *P. pilosissima.*
Leaves terete, filiform, sparingly ciliate. Anther-connective much produced beyond the cells . . . . . 3. *P. filifolia.*

1. **P. ciliata,** *R. Br. Prod.* 301. Rhizome short and thick. Radical leaves with broad black rigid sheathing bases, narrow-linear, $\frac{3}{4}$ to $1\frac{1}{2}$ ft. long, 1 to 2 lines broad, rigid or rather flaccid, prominently striate, more or less bordered with long cilia usually distant and sometimes only to be seen on young leaves. Flowers mostly about 2 lines long, the cyme-like clusters usually rather dense at first consisting of about 6 to 12 flowers, each on a very short pedicel in the axil of a linear bract of 1 to 2 lines; as the flowering advances the branches of the cluster sometimes lengthen to near 1 in., the whole inflorescence forming a loose panicle always much shorter than the leaves. Perianth-segments lanceolate, evidently spreading when fresh although almost universally erect in the dried specimens. Filaments very short; anthers oblong, the connective not produced beyond the cells. Ovary at the time of flowering 1-celled, with a broad thick disk- or cup-shaped central placenta at the base of the cavity, upon which are seated 3 erect orthotropous ovules, but I have occasionally found a persistent axis in

the centre connected with the apex of the cell and generally along the walls of the cell the remains of three dissepiments, so that probably in a very young state the ovary is normally 3-celled. Fruit a small ovoid-globular nut, crowned by the persistent perianth, the pericarp thick and apparently indehiscent, containing a single nearly globular seed with a membranous testa and fleshy albumen, not quite ripe however in the specimens examined.—Endl. in Pl. Preiss. ii. 29.

W. Australia. King George's Sound, *R. Brown, F. Mueller;* Capel and Vasse rivers, *Oldfield;* Hampden, *Clarke.*

Var. *lævis.* Leaves rather long, broad, and rigid, with very few cilia only to be seen on the young leaves, which, however, I have never found to be absolutely without any. —*P. lævis*, Lindl. Swan Riv. App. 43; Endl. in. Pl. in Preiss. ii. 29.—Swan river, *Drummond, 1st coll., Preiss, n.* 1558; Capel river, *Oldfield.*

2. **P. pilosissima,** *F. Muell. Fragm.* viii. 23 (as a var. of *P. ciliata*). Leaves erect, rigid, mostly under 1 ft. long, flattened but under 1 line broad, striate, with long hairs on the sides as well as on the margins. Stems short, the panicle rather loose and hairy. Bracts linear-subulate. Flowers about 2 lines long, the segments narrow but obtuse. Anther-connective produced beyond the cells but not so much so as in *P. filifolia.* Ovary in the flowers examined completely 3-celled, but the dissepiments very thin and readily disappearing as the flower withers.

W. Australia, *Drummond.*

3. **P. filifolia,** *F. Muell. Fragm.* viii. 23 (as a var. of *P. ciliata*). Leaves filiform, terete, not conspicuously striate, glabrous except a few long cilia near the base, the longest above 1 ft. long. Panicle loose and few-flowered, shorter than the leaves. Bracts small, lanceolate. Perianth about the size of that of the two preceding species, but the segments narrowly acuminate. Anther-connective conspicuously produced into a rather long appendage beyond the cells. Ovary more or less completely 3-celled, with one ascending acuminate ovule in each cell.

W. Australia, *Drummond, n.* 207, *and* 368.

Tribe 2. Conostyleæ.—Rhizome short with fibrous roots, the base of the stem short and sometimes covered with brown sheathing bases of old leaves so as to resemble bulbs, or shortly branched and densely tufted, or rarely elongated and proliferous-branched. Leaves radical or at the base of the flowering stems, with distichous sheathing bases or densely tufted, the lamina long, laterally flattened or terete. Scapes or flowering stems usually bearing 1 or 2 sheathing bracts or short leaves. Flowers plumose-woolly or tomentose outside, in heads, cymes racemes or dichotomous panicles, rarely solitary. Perianth-tube more or less continued above the ovary (except in *Conostylis breviscapa*) the limb continuous with the tube, regular or oblique, the lobes usually appearing uniseriate and almost induplicate-valvate. Stamens 6. Stigmas very small at the end of a filiform style.

The Australian genera are all endemic in West Australia, but some South African and American genera are referrible to the same tribe.

3. TRIBONANTHES, Endl.

Perianth persistent, more or less woolly, deeply divided into 6 segments nearly equal and similar, erect at the base and connivent or cohering into a short tube, then spreading. Stamens 6; filaments broad, lining the perianth-tube and usually adnate to it, produced beyond it into 2 short erect entire or toothed appendages; anthers sagittate, attached to the filaments between the appendages, the connective often produced beyond the cells. Ovary superior, 3-celled, with a conical summit produced into a short style. Ovules numerous in each cell, crowded into several rows on a placenta attached above the middle of the cell extending more or less towards the base. Capsule opening loculicidally at the conical apex in 3 coriaceous valves.—Rhizome producing tubers enveloped in loose membranous scales. Leaves few, with dilated sheathing bases, produced into a terete or channelled lamina. Flowers solitary or few, in a terminal cyme or head. Bracts lanceolate or ovate, usually acuminate.

The genus is limited to West Australia. The species appear to be very variable and difficult to distinguish by positive characters.

Filament-appendages bearing on the back several longitudinal prominent laminæ. Flowers 2 or more, sessile. Perianth-segments glabrous inside . . . . . 1. *T. brachypetala.*
Filament-appendages flat on the back. Perianth-segments woolly on both sides.
Filament-appendages as long as or longer than the anthers.
Flowers solitary within a broadly-ovate bract; segments usually glabrous along the centre outside . . . . . 2. *T. uniflora.*
Flowers 2 or more, sessile or nearly so. Bracts ovate or lanceolate . . . . . 3. *T. australis.*
Flowers 2 or more, distinctly pedicellate . . . . . 4. *T. variabilis.*
Filament-appendages much shorter than the anthers. Flowers solitary or several, on pedicels longer than the ovary . . 5. *T. longipetala.*

1. **T. brachypetala,** *Lindl. Swan Riv. App.* 44. Stems thickened into bulbs at the base, often above 1 ft. high, more or less woolly in the upper part. Leaves 2 to 4, with broad sheathing bases, tapering into a very narrow almost terete but usually channelled lamina, the lowest sometimes 6 in. long, but usually very much shorter. Flowers 3 to 6 together, closely sessile in a dense terminal head. Bracts broadly ovate, glabrous or nearly so, 1 or 2 of the outer ones produced into a point longer than the flowers. Perianth-segments woolly outside, glabrous inside, shortly erect at the base, the spreading or reflexed laminæ 2 to 2½ lines long, always shorter than the ovary. Filaments broad, adnate to the erect part of the segments, produced above it into 2 obovate appendages longer than the anther, each with a dorsal appendage divided into 4 longitudinal laminæ. Protruding apex of the capsule 3-valved.—*T. odora,* Endl. in Pl. Preiss. ii. 28.

W. Australia. Swan river, *Drummond, 1st coll.*; Canning river, *Preiss, n.* 2394; between Swan river and King George's Sound, *Harvey.*

Endlicher does not explain upon what grounds he proposed to suppress Lindley's names for this and the *T. longipetala.*

2. **T. uniflora,** *Lindl. Swan Riv. App.* 44. A slender species, none of our specimens above 8 in. high and many not above 4 in., and less woolly than the others. Tubers of the rhizome with loose membranous coatings. Leaves slender, nearly terete. Flowers solitary in all our specimens. Bracts 1 or 2, broadly ovate, membranous almost scarious, the outer one with a short or long green point. Perianth-segments 3 to 4 lines long, more or less woolly on the upper surface and sometimes densely woolly throughout, but almost always green outside along the centre and sometimes the wool very thin all over. Filament-appendages as long or nearly as long as the anthers, smooth and flat on the back, often ending in points. Style variable in length. Placentas reaching to the base of the cells of the ovary.—*T. violacea,* Endl. in Pl. Preiss. ii. 28.

W. Australia. Swan river, *Drummond, 1st coll.*; Vasse river, *Mrs. Molloy;* between Mounts Elphinstone and Melville, *Preiss, n.* 1562; King George's Sound, *Muir;* Kalgan river, *Oldfield;* Cape Legrand, *Maxwell.*

The short appendages to the filaments described by Lindley, were probably injured in the specimen he examined. I find them about equal to the anthers in Drummond's as well as other specimens, but irregular.

3. **T. australis,** *Endl. Nov. Stirp. Dec.* 27, *Iconogr.* t. 109. Stems usually under 1 ft., woolly in the upper part. Leaves usually shorter and not so slender as in *T. brachypetala.* Flowers 2 to 6 together almost sessile in a terminal head or dense cyme. Bracts ovate or lanceolate, glabrous, 1 or 2 often produced into a point as long as or longer than the flowers. Perianth-segments ovate or elliptical, 3 to 5 lines long, woolly on both sides, the erect base connate with the filaments into a short tube. Filament-appendages erect, flat, as long as or longer than the anthers, sometimes almost petal-like, without dorsal appendages but sometimes a double keel along the centre of the filament before it divides produced into 1 or 2 small intermediate teeth or lobes.

W. Australia. King George's Sound and adjoining districts, *Huegel, Oldfield, F. Mueller, Muir;* eastward to Bremer and South-west bays, *Maxwell.*

4. **T. variabilis,** *Lindl. Swan Riv. App.* 44. Stems often 1 ft. high, woolly as in the allied species. Leaves tapering into a rather thick almost terete lamina as in *T. australis.* Flowers 2 to 6 together or sometimes more, in a terminal dense corymb, pedicellate, but the pedicels shorter than the ovary. Perianth-segments oblong, as long as or longer than the ovary, woolly on both sides. Filament-appendages longer than in *T. australis,* 2- or 3-toothed or entire and then sometimes quite petal-like.

W. Australia. Swan river, *Drummond, 1st coll. n.* 764, *Helmich;* Vasse river, *Mrs. Molloy;* Greenough flats, *C. Gray;* Busselton, *Preiss.*—Perhaps a variety only of *T. australis.*

5. **T. longipetala,** *Lindl. Swan Riv. App.* 44. Rhizome producing several oblong or globose tubers loosely enveloped in membranous coatings. Stems usually ¾ to 1 ft. high, woolly in the upper part. Leaves nearly terete, rather thick and not long. Flowers solitary or in

a loose cyme of 2 to 6, the pedicels as long as or longer than the ovary. Bracts lanceolate or linear. Perianth-segments 5 to 7 lines, usually about 6 lines long, narrower than in the other species, densely covered on both sides with a white cottony wool, the short erect bases distinct but connected by their wool. Filaments short and flat, produced into 2 or 4 erect lobes always much shorter than the anther. Style reaching only to the base of the anthers. Placentas pendulous, not half the length of the cells, densely covered with several rows of ovules.—*T. Lindleyana*, Endl. in Pl. Preiss. ii. 27.

W. Australia. Swan river, *Drummond, 1st coll. n.* 763, 764; *Preiss, n.* 1561; Upper Hay river, *F. Mueller, Miss Warburton;* King George's Sound, *Muir.*

4. CONOSTYLIS, R. Br.

Perianth persistent, shortly tubular or campanulate above the ovary (except in *C. breviscapa*), the limb of 6 lobes either all nearly equal and almost induplicate-valvate, or 3 inner ones rather smaller. Stamens 6, inserted at the base of the perianth-lobes; filaments short, erect, anthers oblong or linear, the cells free at the base or to the middle. Ovary inferior or partially superior, 3-celled, the summit conical, tapering into a filiform style, with 3 very small adnate terminal stigmas. Ovules several often numerous in each cell, crowded on a more or less stipitate placenta attached above the middle of the cell, and usually but not always in its inferior or adnate portion. Capsule opening loculicidally at the free conical apex in 3 coriaceous valves, the style itself often persistent and splitting almost to the end. Leaves in distichous or crowded tufts on a short rhizome or tufted or proliferous-branched stem, linear, sheathing at the base, the lamina laterally flattened or terete. Scapes from the centre of the leaf-tufts more or less tomentose or woolly, bearing 1 or more short sheathing bracts. Flowers usually of a dull yellow, more or less plumose-tomentose outside, in a terminal head rarely lengthening out into a shortly dichotomous cyme.

The genus is limited to West Australia.

Sect. 1. **Brachycaulon.**—*Perianth divided to the ovary into 6 spreading segments. Anther-cells distinct, pendulous from a short connective. Placentas small, with few reflexed ovules.*

Densely tufted branching plant. Flowers in dense heads almost sessile or on very short scapes within the leaves . . . . . 1. *C. breviscapa,*

Sect. 2. **Catospora.**—*Perianth more or less tubular above the ovary, the lobes all equal or 3 inner ones smaller. Anther-cells adnate to the connective at least to the middle. Placentas recurved, dilated, with several ovules reflexed from the under surface.* (*Perianth usually with long hairs mixed with the plumose tomentum.*)

Perianth glabrous or loosely hairy inside, with equal lobes and stamens.

Leaves terete, not striate. Flowers 2 or 3 together within several scarious bracts almost sessile within the leaves . . 2. *C. vaginata.*

Leaves flat. Flowers in globular heads.

Leaves with thick margins, scarcely ciliate. Scapes short, with 2 large concave keeled bracts under the head . . 3. *C. petrophiloides.*

Leaves with thin ciliate-setose margins. Scapes long. Bracts small. Placentas in the adnate part of the ovary . . . 4. *C. setosa.*
Leaves with ciliate margins. Scapes rather long. Bracts small. Placentas above the adnate part of the ovary . 5. *C. aurea.*
Perianth tomentose or woolly inside, 3 inner lobes smaller than the outer, with shorter stamens.
Leaves flat.
Leaves bordered by few or short setæ. Perianth-segments scarcely longer than the free part of the tube . . . . 6. *C. melanopogon.*
Leaves bordered by long spreading setæ. Perianth-segments much longer than the free part of the tube.
Leaves mostly 6 in. long or more and 1 line broad, usually exceeding the scape . . . . . 7. *C. setigera.*
Leaves under 2 in., very narrow or subulate-acuminate, shorter than the scape . . . . . 8. *C. psyllium.*
Leaves terete or slightly flattened.
Leaves hirsute all over with upwardly appressed hairs . . 9. *C. villosa.*
Leaves white with a close tomentum . . . . . 10. *C. Drummondii.*

Sect. 3. **Euconostylis.**—*Perianth more or less tubular above the ovary, the lobes all equal. Anther-cells adnate to the connective at least to the middle. Placentas more or less stipitate but scarcely recurved, covered all over in front with numerous ovules.*

Series 1. **Involucratæ.**—*Perianth with long scarcely denticulate hairs or setæ without any tomentum. Scapes short. Leaves long. Flowers capitate with lanceolate bracts.*

Leaves very narrow but flat, with prominent striæ . . . . . 11. *C. involucrata.*
Leaves terete, smooth . . . . . 12. *C. juncea.*

Series 2. **Proliferæ.**—*Perianth shortly plumose-tomentose. Stems proliferous or stoloniferous. Leaves short (except in* C. candicans), *very densely tufted, usually white when young (except in* C. gladiata), *often becoming glabrous.*

Dwarf densely tufted plants, with rather large flowers, solitary or rarely 2 together, almost sessile within the leaves.
Leaves rigid, glabrous, 2 to 3 lines broad . . . . . 13. *C. gladiata.*
Leaves flaccid, white when young, not above ½ line broad . 14. *C. scorsiflora.*
Leaves nearly terete, short, and rigid. Flowers in pedunculate heads.
Scapes not longer than the leaves . . . . . 15. *C. teretiuscula.*
Scapes many times as long as the small leaves . . . . . 16. *C. stylidioides.*
Leaves flaccid, very narrow but flat, green and grass-like or white only when very young, bordered with a few distant setæ, rarely above 3 or 4 in. long. Scapes long.
Flowers in a dense head. Perianth 4 to 5 lines long . . . 17. *C. prolifera.*
Flowers in a loose raceme. Perianth 6 lines long . . . . 18. *C. racemosa.*
Leaves flat, narrow, and rather rigid, mostly above 6 in. long. Flowers capitate on long scapes.
Leaves very white-tomentose when young, and scarcely losing the tomentum when old . . . . . 19. *C. candicans.*
Leaves tomentose-pubescent when young, soon becoming glabrous . . . . . 20. *C. dealbata.*
Leaves glabrous from the first.
Leaves rarely above 1 line broad. Scapes under 1 ft. long 21. *C. Preissii.*
Leaves 2 to 3 lines broad. Scapes 1 to 2 ft. . . . . 22. *C. bracteata.*

Series 3. **Normales.**—*Perianth shortly plumose-tomentose, rarely with longer hairs mixed. Stem short, rarely shortly proliferous. Leaves usually long, glabrous except marginal setæ. Scapes several- or many-flowered, much shorter than the leaves or very rarely nearly as long.*

Perianth-lobes scarcely longer than the free part of the tube.
- Leaves subterete, rush-like, not setose . . . . . 23. *C. filifolia.*
- Leaves flat but very narrow, with long rigid distant setæ . . 24. *C. spinuligera.*
- Leaves flat, rigid, with much thickened nerve-like margins and distant pungent setæ . . . . . 25. *C. bromelioides.*
- Leaves flat, rather rigid, the margins not prominent, with distant rather rigid setæ . . . . . 26. *C. aculeata.*

Perianth-lobes twice or three times as long as the free part of the tube. Leaves flat, rarely almost terete, with few or short setæ.
- Scapes nearly as long as the leaves. Flowers in a globular head.
  - Leaves rarely above 1 line broad. Stems usually proliferous 21. *C. Preissii.*
  - Leaves 2 to 3 lines broad. Stems very short. Scapes 1 to 2 ft. . . . . 22. *C. bracteata.*
- Scapes not half so long as the leaves.
  - Flowers few in a loose oblong panicle. Perianth with long hairs intermixed with the tomentum . . . . . 27. *C. laxiflora.*
  - Flowers numerous in a branching cyme . . . . . 28. *C. cymosa.*
  - Flowers capitate. Perianth divided almost to the ovary.
    - Leaves mostly 2 to 3 lines broad . . . . . 29. *C. serrulata.*
    - Leaves ½ to 1½ lines broad, or almost terete . . . . 30. *C. caricina.*

Sect. 3. **Androstemma.**—*Perianth tubular above the ovary, the lobes all equal and narrow. Filaments erect, filiform, much longer than the anthers. Ovules rather numerous, bordering a peltate placenta.*

Dwarf densely tufted plant, with large solitary flowers almost sessile within the leaves, surrounded by short scarious bracts . 31. *C. Androstemma.*

Sect. 1. Brachycaulon.—Perianth divided to the ovary into 6 spreading segments. Anther-cells distinct, pendulous from a short connective on short erect filaments. Placentas small, with few reflexed ovules.

The peculiar anthers and perianth of this plant might have afforded grounds for establishing it as a distinct genus of a value at least equal to that of *Androstemma.*

1. **C. breviscapa,** *R. Brown, Prod.* 301. Stems very short and branching, densely covered with tufts of distichous leaves, with brown sheathing bases, the lamina flat, rigid, 6 to 8 in. long and 1 to 2 lines broad, striate, glabrous, without marginal cilia. Scapes very short amongst the leaves, with a dense globose head of sessile flowers. Bracts lanceolate, the inner ones linear. Ovary narrow-turbinate, tomentose. Perianth divided to the ovary into lanceolate acute spreading segments, nearly 3 lines long, all nearly equal, densely and shortly plumose-tomentose outside, loosely so inside. Anthers scarcely 1 line long, appearing at first sight sessile and erect at the mouth of the tube, but the cells are really distinct from their insertion and pendulous from a small connective at the apex of a slender filament which they conceal. Style shortly protruding beyond the anther, tapering and splitting almost to the apex as in many other species. Placenta-bearing portion of the ovary inferior, with a free conical summit.

W. Australia. Lucky bay, *R. Brown,* and probably the same locality, *Baxter.* It is also in Cunningham's herbarium marked as from S. W. Australia, *Fraser,* but not in Cunningham's handwriting, and the specimen may in fact be of Baxter's collecting.

I have seen it from no other locality, but Schultz, Syst. vii. 294, evidently saw the true plant in Sieber's herbarium, and has correctly described it.

Sect. 2. Catospora.—Perianth more or less tubular above the ovary, the lobes all equal or the 3 inner ones smaller with the stamens shorter or inserted lower down; the perianth usually with long hairs intermixed with the plumose tomentum outside, and often hairy or woolly inside. Anther-cells adnate to the connective at least to the middle. Placentas recurved, dilated, with several ovules reflexed from the under surface.

2. **C. vaginata,** *Endl. in Pl. Preiss.* ii. 23. Stems densely branched, forming tufts of 2 to 4 in. covered with the sheaths of old leaves. Leaves linear-terete, rush-like, channelled along the inner or upper side but not otherwise striate, 3 to 5 in. long. Flowers 2 to 4 together, sessile in little heads surrounded by imbricate scarious bracts and borne on very short hairy peduncles within the upper leaves. Perianth about ½ in. long, softly hairy outside, glabrous or slightly hairy within, the lobes narrow linear-lanceolate, about as long as the free part of the tube. Anthers longer than the filaments. Placentas in the adnate part of the ovary, projecting and dilated, with 3 or 4 ovules pendulous from the under side; the free summit of the ovary conical with a filiform style.—Hook. Ic. Pl. t. 853.

W. Australia. Upper Kalgan river, *Oldfield, F. Mueller;* towards Cape Riche, *Preiss, n.* 1383, and probably the same neighbourhood, *Baxter, Drummond, n.* 444; West Mount Barren, *Maxwell.*

3. **C. petrophiloides,** *F. Muell. Herb.* Leaves flat, glabrous and bordered with small appressed cilia as in some specimens of *C. aurea*, but much thicker, with few prominent veins, 2 to 6 in. long in the only specimen seen. Scapes shorter than the leaves, densely white-woolly. Flowers numerous in very dense globular heads above 1 in. diameter, subtended by 2 broad concave carinate and shortly acuminate coloured bracts, about as long as the flowers and glabrous. Perianth 7 to 8 lines long, densely woolly-villous outside with long hairs plumose at the base, sprinkled with a few hairs inside; the lobes linear, much longer than the free part of the tube. Anthers long linear, on very short filaments. Placentiferous portion of the ovary inferior but shorter than the free conical summit; placentas prominent and dilated, with several ovules reflexed from the under side.

W. Australia. Flats on the Phillips river, a single specimen in Herb. F. Mueller.

4. **C. setosa,** *Lindl. Swan Riv. App.* 44, t. 6. Stem very short. Leaves flat, rigid, finely veined, often nearly 1 ft. long, 1 to 2 lines broad, glabrous but bordered towards the base with long fine cilia. Scapes about as long as the leaves, loosely woolly. Flowers in a dense terminal head often 1½ to 2 in. diameter. Bracts narrow, acuminate, shorter than the flowers. Perianth 10 lines to 1 in. long, very densely silky-woolly outside with long hairs plumose at the base, more or less hairy or woolly inside; lobes about as long as the cylindrical tube, all

narrow-lanceolate and nearly equal or 3 inner ones rather smaller. Stamens all equal, the filaments slender, erect and at least as long as the small narrow anthers. Placentas in the adnate part of the ovary dilated, with the ovules reflexed from the under surface.—Endl. in Pl. Preiss. ii. 17.

W. Australia. Swan river, *Drummond, 1st coll., Preiss, n.* 1408.

5. **C. aurea,** *Lindl. Swan Riv. App.* 44. Stem or rhizome short. Leaves flat, rigid, prominently veined, often 1 ft. long, 2 to 3 lines broad, glabrous but bordered by short rigid marginal cilia usually numerous. Scapes shorter than the leaves, densely covered with a loose plumose wool, with a linear-lanceolate silky-woolly bract usually about the middle. Flowers in a dense globular head of 1 to 1¼ in. diameter, the short bracts entirely concealed. Perianth 6 to 7 lines long, of a thicker consistence than in most species, densely covered outside with a plumose wool of a golden-yellow or rarely pale-coloured, quite glabrous inside, the adnate portion very short and turbinate; the lobes narrow and thick, rather longer than the free portion of the tube. Anthers linear, rather long, attached by the centre to very short filaments. Ovary more than half or almost entirely superior, the placentas attached in the free portion, stipitate and dilated, with many ovules reflexed from the under side. Styles slender.—Endl. in Pl. Preiss. ii. 17; *C. sulphurea,* Endl. l.c.

W. Australia. Swan river, *Drummond, 1st coll. n.* 750, 759, *Preiss, n.* 1381, 1382, and others; Toodyay and Cape Naturaliste, *Oldfield.*

6. **C. melanopogon,** *Endl. in Pl. Preiss.* ii. 18. A low species, but the leafy stem sometimes branching and elongated to 2 in. or rather more. Leaves rigid, flat, attaining 6 in. to 1 ft. in length and about 1 to 1½ lines broad, striate, glabrous except the margins ciliate when young. Scape woolly, shorter than the leaves, bearing 1 or 2 bracts, the upper one produced into a long point. Flowers 6 to 10 in a terminal head, the subtending bracts narrow and short. Perianth plumose-woolly outside, with longer hairs often turning to a dark colour, more or less hairy or woolly inside, about ½ in. long; lobes about as long as the free part of the tube, but irregularly separating, the three inner ones shorter and more petal-like than the outer. Anthers oblong, on rather thick filaments, the 3 inner ones much shorter than the outer. Placentas in the adnate part of the ovary, projecting and dilated, the ovules not numerous, reflexed from the under surface; conical apex of the ovary long and narrow.

W. Australia. Swan river, *Drummond, 1st coll. n.* 754, *Preiss, n.* 1387; Kalgan in sand near the sea, *Oldfield;* south of Stirling Range, *F. Mueller;* Perongerup, *Mrs. Knight.*—Very near *C. setigera,* but without the long setæ to the leaves of that species, and the perianth less deeply divided.

Var. *major.* Perianths 7 to 8 lines long. Vasse river, *Pries;* Swan river, *Helmich.*

7. **C. setigera,** *R. Br. Prod.* 300. Short leafy stems much branched in dense tufts. Leaves rather flaccid, flat but very narrow and grass-

like, striate, mostly about 6 in. long, fringed below the middle or nearly the whole length with long spreading setæ. Scapes shorter than the leaves, white-woolly or tomentose, bearing 1 or 2 bracts with broad sheathing bases below the inflorescence. Flowers 6 to 10 in a terminal head with very short subulate bracts, the outer ones very shortly dilated at the base. Perianth 5 to 6 lines long, plumose-tomentose and hirsute with longer hairs outside, shortly woolly inside; the tube campanulate, the free about equal to the adnate part; lobes narrow, much longer than the tube, the 3 inner ones rather smaller and more petal-like than the outer. Filaments shorter than the anthers, those opposite the inner perianth-lobes shorter and inserted lower down than the others; anther-cells free from the middle. Placentas in the adnate part of the ovary, dilated, with rather few ovules reflexed from the under side.—A. Rich. Sert. Astrol. t. 29 (not good); *C. æmula*, Lindl. Swan Riv. App. 45; Endl. in Pl. Preiss. ii. 20.

W. Australia. King George's Sound, *R. Brown*, *Baxter*, *A. Cunningham*, *F. Mueller*; thence to Swan river, *Drummond*, *1st coll. n.* 757, *Oldfield*, *Preiss*, *n.* 1390; eastward to Cape Arid, *Maxwell*.

C. discolor, Endl. in Pl. Preiss. ii. 20, from Swan river, *Preiss*, *n.* 1392, only differs from the common *C. setigera* in the purplish tinge assumed by the external wool of the perianth. *C. assimilis*, Endl. l.c., which I have not seen, must also, from the character given, be but a slight variety of *C. setigera*.

8. **C. psyllium,** *Endl. in Pl. Preiss.* ii. 21. Very near *C. setigera* and considered by F. Mueller as a dwarf variety of that species. Leaves tufted, about 2 in. long, very narrow, often almost terete, usually falcate and tapering to a point, fringed with spreading setæ as in *C. setigera*. Scapes as long as the leaves or rather longer. Flowers rather smaller than in *C. setigera*, but their structure as well as their number in a terminal head the same as in that species.—*C. minima*, Endl. l.c.

W. Australia. York district, *Preiss*, *n.* 1391; sand plains south of Stirling range, *F. Mueller*; Box vale, *Miss Wells*.

C. pusilla, Endl. l.c. 20, only differs from *C. psyllium*, as *C. discolor* from *C. setigera*, in the purple tinge assumed by the external wool of the perianth.

9. **C. villosa,** *Benth.* Stems very short and tufted like those of *C. setigera*. Leaves 6 to 8 in. long, under 1 line broad, flat and thick or sometimes almost terete, striate, ciliate and hairy all over not on the margins only. Scapes densely white-woolly, shorter than the leaves. Flowers 10 to 20 in a terminal globular head. Bracts small and narrow. Perianth 5 or at length 6 lines long, plumose-woolly outside, woolly hairy inside; lobes narrow, about as long as the tube and ovary, the 3 inner ones rather smaller and the 3 inner stamens shorter than the others as in *C. setigera*; anther-cells adnate almost to the base. Placentas in the adnate part of the ovary, dilated, with several ovules reflexed from the under surface.

W. Australia, *Drummond*, *n.* 311.

10. **C. Drummondii,** *Benth.* Stems short, densely tufted. Leaves linear-terete or scarcely compressed, rigid, scarcely striate, 6 to 9 in.

long, covered with a close whitish tomentum and a few longer appressed hairs intermixed, especially on the younger leaves. Scapes much shorter than the leaves, loosely woolly. Flowers sessile in a terminal head, with a membranous bract terminating in a long leafy point either immediately under the head or lower down on the scape. Perianth scarcely 5 lines long, plumose-tomentose outside, pubescent inside, the lobes narrow, rather longer than the free part of the tube, the 3 inner ones rather smaller, with their stamens rather shorter than the others. Anthers oblong-linear; filaments short. Placentas prominent from the adnate part of the ovary, dilated, with reflexed ovules on the under side.

W. Australia. Probably to the eastward of King George's Sound, *Drummond.*

Sect. 3. Euconostylis.—Perianth more or less tubular above the ovary, the lobes all equal. Anther-cells adnate to the connective at least to the middle. Placentas more or less stipitate but scarcely recurved, covered all over in front with numerous ovules, and always in the adnate part of the ovary.

11. **C. involucrata,** *Endl. in Pl. Preiss.* ii. 23. Stems very short. Leaves often above 1 ft. long, flat, varying from ½ line to 2 lines in breadth, rigid, striate, glabrous, the margins sometimes shortly and loosely ciliate near the base. Scapes 2 to 3 in. long, loosely woolly-villous. Flowers in heads or spikes not very compact and the rhachis sometimes forked, not very numerous, subtended by broadly lanceolate acuminate leafy bracts the outer ones often as long as or rather longer than the flower. Perianth varying from ½ to ¾ in. long, sprinkled outside with long rigid simple or minutely denticulate hairs, without the dense wool or tomentum of other species, glabrous inside; lobes narrow, at least twice as long as the free part of the tube. Placentas very densely covered with numerous ovules.

W. Australia. Swan river, *Drummond, 1st coll. n.* 756, *Preiss, n.* 1407, *Oldfield;* Cape Naturaliste, *Oldfield,* all with narrow but not terete leaves; Swan river, *Drummond, 1st coll. n.* 756; Hampden, *Clarke,* both with rather broader leaves.

12. **C. juncea,** *Endl. Nov. Stirp. Dec.* 19. This species, which I have not seen, is said to have the habit, long leaves, short scapes, capitate flowers with lanceolate bracts and perianths with simple rigid hairs of *C. involucrata*, and only to differ from that species in the leaves almost or quite terete, obscurely striate.

W. Australia. Raised in Huegel's garden from Swan river seeds (*Endlicher*).

13. **C. gladiata,** *Benth.* Stems short, densely branched and tufted like those of *C. breviscapa.* Leaves densely distichous, 3 to 4 in. long and 2½ to 3 lines broad in the middle, slightly falcate, tapering at both ends, rigid and striate, glabrous, the margins quite entire or with a few very small distant setæ. Scape only a few lines long, covered with 2 or 3 acuminate brown bracts, and bearing a single flower which although large is almost concealed amongst the foliage. Perianth 8 to 9 lines

long, rather narrow, shortly plumose-tomentose outside, more or less villous inside, the narrow lobes at least 3 times as long as the short free portion of the tube. Anthers long, on short filaments, all equal. Ovules very numerous, covering the stipitate placentas.

W. Australia, probably to the eastward of King George's Sound, *Drummond.*

14. **C. seorsiflora,** *F. Muell. Fragm.* i. 158, viii. 19. A dwarf species, stoloniferous or proliferously branched, forming dense tufts not exceeding 4 or 5 in. Leaves very densely tufted, very narrow linear, often cottony-white and ciliate with long soft hairs when young, glabrous or nearly so when full grown, rarely above 2 in. long, ending in fine points and much dilated at the base. Scapes shorter than the leaves, sometimes very short, tomentose, with 1 or 2 broad membranous sheathing bracts usually produced into long subulate points or lamina. Flowers 1, 2 or rarely 3 on the scape, the perianth about 8 lines long, shortly plumose-tomentose outside with a few longer hairs, loosely pubescent or shortly villous inside; lobes lanceolate, narrow, rather longer than the campanulate free part of the tube. Anthers linear, on short filaments. Placentas densely covered with very numerous ovules.

W. Australia. King George's Sound or to the eastward, *Baxter;* W. end of Stirling Range, *F. Mueller;* Gardner and Oldfield rivers, *Maxwell;* Toodyay rivulets, *Oldfield.*

15. **C. teretiuscula,** *F. Muell. Fragm.* viii. 18. Stems probably proliferous. Leaves densely tufted, nearly terete and white-tomentose when young, like those of *C. stylidioides*, but rather longer, attaining 2 in. Scapes scarcely 1½ in. long, tomentose. Flowers few in the head, resembling those of *C. stylidioides*, but rather smaller, the perianth lobes narrower and more acute.

W. Australia, *Oldfield.* Described only from the fragmentary specimens in herb. F. Mueller, and requires further investigation.

16. **C. stylidioides,** *F. Muell. Fragm.* viii. 17. Stems hard, rigid, repeatedly branched, the branches clustered with the leaves at the nodes within 2 or 3 persistent sheathing bracts or scales. Leaves very dense in the clusters, linear-acuminate or linear-subulate, nearly terete, very acute, 3 to 9 lines long; the younger inner or longer ones densely white-tomentose, the outer or shorter ones often nearly glabrous and striate. Flowers closely sessile in globular heads, on a loosely tomentose peduncle of 3 or 4 in., arising from the centre of the principal clusters of leaves and branches, with usually a small broad bract at or below the middle, the outer bracts of the head very broad and shorter than the flowers. Perianth campanulate, about ½ in. long, villous and plumose-tomentose outside, glabrous inside, the adnate base very short, the lobes broadly lanceolate, about as long as the free portion of the tube. Anthers oblong, on very short filaments. Placentas small, covered with numerous ovules.

W. Australia. Near Oolingara, Murchison river, forming dense tufts on rocks and sand plains, *Oldfield.*

17. **C. prolifera,** *Benth.* Stems slender, proliferously branched. Leaves in dense tufts, narrow-linear, usually flaccid, tapering into fine points, varying in length from 1 to 3 or 4 in., glabrous, striate, bordered by fine distant rigid cilia. Scapes longer than the leaves, loosely villous with plumose hairs, bearing 1 or rarely 2 distant linear or acuminate bracts. Flowers sessile in a terminal globose head, the outer bract acuminate, usually but not always longer than the head. Perianth campanulate, 4 to 5 lines long, plumose-villous outside, glabrous or slightly hairy between the stamens inside, the lobes longer than the free part of the tube. Ovules rather numerous, covering the small ovate projecting placentas.

W. Australia. Swan river, *Drummond;* Murchison river, *Oldfield.*

18. **C. racemosa,** *Benth.* Stems slender and proliferously branched. Leaves densely tufted, narrow flaccid and grass-like, resembling those of *C. prolifera,* of which this may be a variety, but the flowers are considerably larger, the head extended into a loose simple or forked raceme. Perianth ½ in. long, plumose-villous outside, glabrous inside, the lobes scarcely longer than the campanulate free part of the tube. Ovules numerous, on short placentas.

W. Australia. White Peak, Champion bay, *Oldfield.*

19. **C. candicans,** *Endl. Nov. Stirp. Dec.* 20, *and in Pl. Preiss.* ii. 16. Stem proliferous, erect and short in some specimens, in others elongated and said to climb amongst bushes for several feet, loosely tomentose or glabrous, the branches and leaves densely clustered. Leaves linear, flat, the outer ones of the tuft or nearly all in the upper tufts short, but some much elongated, attaining occasionally in the lower tufts above 1 ft., varying in breadth from ½ line to near 2 lines, covered with a white tomentum concealing the veins and often ciliate on the margins, at length becoming sometimes nearly glabrous and showing a few striæ. Scapes or peduncles usually longer than the leaves, with a linear or linear-lanceolate bract at or above the middle. Flowers 10 to 20, almost sessile in a globular head, either dense or rather loose with a bifid rhachis. Bracts narrow, either all short, or one of them more leafy and as long as or longer than the flowers. Perianth campanulate, about ½ in. long, tomentose outside, hairy or nearly glabrous inside, the lobes glabrous inside, scarcely so long as the tube. Anthers linear, on very short filaments. Ovules numerous, covering the short placentas.—*C. albicans,* A. Cunn. Herb.; *C. propinqua,* Endl. in Pl. Preiss. ii. 17.

W. Australia. Swan river, *Drummond,* 1*st coll.*, *Oldfield;* abundant on the rocky and sandy banks of Rottenest island, *A. Cunningham, Drummond, Preiss, n.* 1400.

Var. *leptophylla.* Leaves very densely tufted, narrow, with long points, flaccid, 2 to 4 in. long. Scapes often bearing 2 or 3 pedunculate heads of flowers.—Swan river, *Drummond;* Champion bay, *Oldfield.*

20. **C. dealbata,** *Lindl. Swan Riv. App.* 45. Very nearly allied to *C. candicans* and perhaps a variety connecting it with *C. Preissii* and

C. bracteata, Endl. Stem less elongated than in *C. candicans*. Leaves, although still densely tufted, more normally distichous, longer and more rigid, tomentose pubescent and rather white all over when young, but soon losing the tomentum. Scapes about as long as the leaves. Flowers rather numerous in terminal heads. Perianth about ½ in. long, plumose-tomentose outside, glabrous inside, the lobes rather longer than the free part of the tube. Ovules numerous, covering the short placentas.

W. Australia. Swan river, *Drummond, 1st coll.*

C. bracteata, Lindl., Swan Riv. App. 45, from the same collection, appears to be established on vigorous specimens of *C. dealbata*, with the foliage nearly glabrous, some of the leaves 8 to 10 in. long, and the outer bracts under the flower-heads rather more leafy. A very gradual passage may be traced from the preceding five or six species, through the long-scaped less proliferous *C. Preissii* and *C. bracteata*, Endl., to the common *C. aculeata*, however remote may be the extreme species of the series.

21. **C. Preissii,** *Endl. in Pl. Preiss.* ii. 18. Stems usually shortly proliferous. Leaves from distichous sheathing bases, flat, ½ to 1 ft. long, rarely above 1 line broad, rather thick, glabrous, bordered in some specimens by a few very distant rigid cilia, in others almost or quite without. Scapes nearly as long as the leaves, bearing usually 1 or 2 ovate brown bracts more or less acuminate. Flowers sessile in a rather loose terminal head, branching out sometimes into a close cyme, the bracts short and narrow. Perianth about ½ in. long, plumose-tomentose outside with a mixture of longer hairs, glabrous or very slightly hairy inside; lobe narrow, nearly twice as long as the free part of the tube. Ovules numerous, covering the stipitate placentas.

W. Australia. Swan river, *Drummond, 1st coll. n.* 753, *Preiss, n.* 1384; Southern river, *Preiss, n.* 1386.

C. festucacea, Endl. in Pl. Preiss. ii. 18 (Preiss, n. 1386) has the leaves almost without cilia and the perianth more hairy, but the two forms are too closely connected by some of Drummond's specimens to justify their separation.

22. **C. bracteata,** *Endl. in Pl. Preiss.* ii. 16, *not of Lindl.* Stems short, perhaps sometimes slightly proliferous. Leaves glabrous, flat, rigid, 1 to 1½ ft. long, 2 to 3 lines broad, striate, the margins prominent and nerve-like, naked or bordered by a few small distant setæ. Scapes about as long as the leaves, loosely tomentose, with 1, 2, or 3 broad lanceolate bracts, and sometimes with a long peduncle or branch in the axil of one of them. Flowers numerous, in a dense globose terminal head, subtended usually by 1 or 2 lanceolate bracts, the other bracts small and linear, all shorter than the flowers. Perianth nearly ½ in. long, plumose-tomentose outside, glabrous or slightly hairy inside, the lobes nearly twice as long as the free part of the tube. Anthers linear, on short filaments. Ovules very numerous, covering the placentas, which are scarcely stipitate.

W. Australia. Swan river, *Drummond, 1st coll. n.* 751, *Preiss, n.* 1405.—The species seems to connect the preceding ones very closely with *C. aculeata*, from which it differs in the leaves scarcely ciliate, the longer scapes, larger heads of flowers, and the perianth more deeply lobed.

23. **C. filifolia,** *F. Muell. Fragm.* viii. 18. Stems short and tufted. Leaves above 1 ft. long, terete, rigid and rush-like, slightly striate, quite glabrous, 1 or 2 outer ones reduced to brown sheathing scales. Scapes very much shorter than the leaves, tomentose-woolly, bearing usually 2 distant ovate brown bracts. Flowers in a loose head often branching into a dense cyme, all nearly sessile within small bracts. Perianth about ½ in. long, plumose-tomentose outside, glabrous inside, the lobes narrow, as long as or rather longer than the free part of the tube. Anthers linear, on short filaments. Placentas covered all over with numerous ovules.

W. Australia, *Drummond.*

24. **C. spinuligera,** *F. Muell. Herb.* Stems densely tufted. Leaves very narrow but flat, 6 in. to nearly 1 ft. long, bordered by long rather rigid spreading distant cilia. Scapes nearly as long as the leaves. Flowers in a loose terminal head, growing out into a short raceme or once-forked cyme, the bracts short and narrow. Perianth about 4 lines long, broadly campanulate, plumose-tomentose outside, glabrous inside, the lobes rather broad, about as long as the free part of the tube. Anthers oblong-linear, as long as the filaments. Placentas covered with numerous ovules.

W. Australia, *Drummond.*

25. **C. bromelioides,** *Endl. in Pl. Preiss.* ii. 18. Stems short in our specimens, but perhaps stoloniferous or proliferous. Leaves glabrous, under 6 in. long, 1½ to 2 lines broad, thick and rigid, with remarkably thick nerve-like margins, and bordered by distant rigid almost pungent setæ. Scapes very short, loosely woolly, bearing 1 or 2 broadly ovate ovate-lanceolate or acuminate bracts. Flowers few, very shortly pedicellate in a rather loose terminal head, with small linear bracts. Perianth about 6 lines long, plumose-tomentose outside, slightly hairy inside, the lobes narrow-lanceolate, rather longer than the free part of the tube. Anthers linear, on short filaments. Placentas stipitate, covered with numerous ovules.

W. Australia. Swan river, *Drummond;* near Avondale, York district, *Preiss, n.* 1601.—The specimens seen are very few, and they may prove to be a variety only of *C. aculeata.*

26. **C. aculeata,** *R. Br. Prod.* 300. Stems very short. Leaves rigid, flat, erect or recurved, 6 in. to 1 ft. long, 1 to 2½ lines broad, finely striate, glabrous but bordered by distant rigid more or less pungent setæ. Scapes usually much shorter than the leaves, rarely nearly as long, tomentose, often slightly branched, with an ovate or ovate-lanceolate brown bract under each branch. Flowers on very short pedicels in a loose head or dense cyme at the end of the scape or branches, with linear-subulate short bracts. Perianth campanulate, about 5 lines long, shortly plumose-tomentose outside, glabrous inside, the lobes lanceolate, obtuse, longer than the free part of the broad tube. Anthers linear, on very short flat filaments. Placentas covered all

over with numerous ovules.—Endl. in Pl. Preiss. ii. 18; Bot. Mag. t. 2989.

W. Australia. King George's Sound and adjoining districts, *R. Brown, A. Cunningham, Drummond, Preiss, n.* 1395, and many others; Greenough flats, *C. Gray*, and Murchison river, *Oldfield*, single specimens, but apparently the same species, which however in the Swan river district seems to be replaced generally by the *C. bracteata*, with longer scapes, larger flowers, the leaves with few or no marginal setæ, &c.

27. **C. laxiflora,** *Benth.* Stems tufted, very short. Leaves mostly above 1 ft. long, flat, striate, 1½ to 2½ lines broad, bordered when young by very short cilia as in *C. serrulata*. Scapes short, not above 6 in. high including the inflorescence, loosely tomentose-villous, branching from about the middle, each branch with a short loose raceme of 3 or 4 flowers, the whole forming a loose oblong somewhat one-sided panicle. Bracts subtending the branches lanceolate, membranous, villous, sometimes above ½ in. long, those under the pedicels small and narrow. Perianth broadly campanulate, about ½ in. long, tomentose outside and villous with long almost silky hairs, shortly plumose at the base, glabrous or sparingly hairy inside. Lobes lanceolate, very acute, twice as long as the free part of the tube. Anthers linear, on short filaments. Placentas covered with numerous ovules.

W. Australia. Vasse river, *Oldfield.*—Although allied in some respects to *C. serrulata*, this differs from the rest of the section in the indumentum of the perianth, and from the whole genus in its inflorescence.

28. **C. cymosa,** *F. Muell. Herb.* Leafy stem short, tufted or shortly branched. Leaves often above 1 ft. long, 1 to near 3 lines broad, finely veined, bordered by a few distant rigid cilia. Scapes much shorter than the leaves, woolly-tomentose, 4 to 6 in. high including the inflorescence. Flowers numerous in a loosely branched cyme, the pedicels 1 to 2 lines long subtended by small linear bracts. Perianth about 5 lines long, plumose-tomentose outside, glabrous inside, the lobes narrow, nearly twice as long as the free part of the tube. Anthers linear, longer than the filaments. Placentas stipitate, covered all over with numerous ovules.

W. Australia. Blackwood river and Champion bay, *Oldfield;* Greenough flats, *C. Gray;* Busselton, *Pries.*

29. **C. serrulata,** *R. Br. Prod.* 300. Rhizome often creeping; stems short, sometimes shortly proliferous. Leaves usually above 1 ft. long and 2 to 3 lines broad, more prominently striate than in *C. aculeata*, and bordered by very small scarcely spreading cilia. Scapes only 2 to 3 in. or very rarely nearly 6 in. long, tomentose-woolly, bearing several long lanceolate bracts. Flowers few, in looser heads or cymes than in *C. aculeata*, the pedicels often 1 to 2 lines long, subtended by linear bracts. Perianth 5 to 6 lines long, plumose-tomentose outside, glabrous inside, divided almost to the ovary into lanceolate acuminate segments. Anthers oblong, shorter than in *C. aculeata*, on very short filaments. Style rather short. Ovules numerous, covering the placentas. Capsules 3 to 4 lines diameter.

W. Australia. King George's Sound, *Menzies;* Kalgan river, *Oldfield,* probably from the same district, *Drummond, n.* 349; Swan river, *Drummond, 1st coll. n.* 758.

C. ensifolia, C. occulta, C. misera, and *C. longifolia,* Endl. in Pl. Preiss. ii. 21, 22, from the neighbourhood of Cape Riche, and *C. spathacea,* Endl. l.c. 22, from Darling range, do not appear to me to be distinguishable even as varieties from *C. serrulata. C. misera* is a starved specimen with short leaves and only 1 or 2 flowers in the head, such as we have also from Drummond. *C. longifolia* is said to have the perianth-lobes shorter than the tube. Preiss's specimen in Herb. F. Mueller is in old fruit only with the lobes worn short. In *C. occulta* the lobes are said to be equal to the tube, but in Preiss's specimen they are certainly longer than the fruit, and in all the above supposed species the lobes are free almost to the ovary, not forming a campanulate free tube as long as the ovary as in *C. aculeata.*

30. **C. caricina,** *Lindl. Swan Riv. App.* 45. Stems very short and densely tufted, the tufts sometimes almost bulbous. Leaves glabrous, 6 in. to nearly 1 ft. long, 1 to 1½ lines broad, rigid, bordered by prominent nerve-like margins minutely serrulate-ciliate. Scapes short, tomentose-woolly, bearing 1 or 2 broad lanceolate acuminate bracts. Flowers few in the head, sessile or nearly so, the bracts linear. Perianth about ½ in. long, plumose-tomentose outside glabrous inside, lobes narrow, 3 times as long as the very short free part of the tube. Anthers linear, on short thick filaments. Placentas prominently stipitate, the ovules numerous, covering the whole front as in other species of *Euconostylis* but reflexed almost as in *Catospora.*—Endl. in Pl. Preiss. ii. 19; *C. graminea,* Endl. l.c.

W. Australia. Swan river, *Drummond, 1st coll., Preiss, n.* 1380, 1385.

Sect. 4. Androstemma.—Perianth tubular above the ovary, the lobes all equal and narrow. Filaments erect, filiform, much longer than the anthers. Ovules rather numerous, bordering the peltate placenta.

The long perianths buried amongst the leaves and surrounded by scarious bracts give this plant a peculiar aspect, which seemed to justify Lindley in establishing it as a separate genus. But subsequent discoveries have shown a nearly similar habit, foliage, and bracts in *C. vaginata,* solitary long flowers buried amongst the leaves in *C. gladiata* and *C. seorsiflora,* and nearly similar stamens in *C. setosa;* there remains as a distinct character only the placentation, which establishes it as a section of the same rank as the three preceding ones.

31. **C. Androstemma,** *F. Muell. Fragm.* viii. 19. Leafy stems short much branched, forming dense tufts of a few inches. Leaves with short sheathing bases, linear-subulate, rigid and rush-like, terete or slightly flattened, prominently striate, 4 to 8 in. long, glabrous in our specimens. Flowers solitary on hairy peduncles or scapes of ¼ to ½ in. bearing several scarious bracts of which 3 or 4 usually close under the flower and rarely above 2 or 3 lines long. Perianth-tube from a very short turbinate adnate base broadly cylindrical, ¾ to 1 in. long, shortly plumose-tomentose outside, glabrous inside; lobes narrow-linear, about ½ in. long, all equal and similar, spreading at the time of flowering. Filaments filiform and erect, nearly as long as the perianth-lobes; anthers several times shorter. Style as long as the stamens. Capsule half-superior, but little broader than the perianth at the time of flower-

ing.—*Androstemma junceum*, Lindl. Swan Riv. App. 46; Field. Sert. Pl. t. 33; Endl. in Pl. Preiss. ii. 24.

W. Australia. Swan river, *Drummond*, 1*st coll. n.* 762, *Preiss*, *n.* 1409; South Hutt river, *Oldfield;* Greenough Flats, *C. Gray.*

5. BLANCOA, Lindl.

Perianth persistent, tubular, the limb of 6 nearly equal almost conduplicate valvate short lobes. Stamens 6, with ovate-oblong anthers on very short filaments or nearly sessile at the orifice of the tube. Ovary with the angles wholly adnate to the perianth, the sides free almost from the base, 3-celled, the summit shortly conical. Style long, filiform, with 3 minute adnate terminal stigmas. Ovules several in each cell, in 2 rows on an adnate linear placenta. Capsule opening at the free apex in 3 coriaceous valves. Seeds few, oblong, striate.—Herb with very short branching stems. Leaves in distichous tufts, with sheathing bases and long laterally flattened linear laminæ. Flowers few together in unilateral racemes at the ends of the branches of the scape, the perianth densely plumose-woolly.

The genus is limited to the single species, endemic in West Australia. It has been united by F. Mueller with *Conostylis*, but is, in fact, much more nearly connected with *Anigozanthos*, but separated from both by characters which appear to be of full generic value, unless all the Australian *Conostyleæ* be treated as sections of one comprehensive genus.

1. **B. canescens,** *Lindl. Swan Riv. App.* 45. Leafy branched stems or rhizomes very short and shortly villous. Leaves rigid, 6 in. to 1 ft. long, about 2 lines broad, finely striate. Scape shorter than the leaves, loosely tomentose, bearing usually a narrow-linear leaf near the base and 2 or 3 short unilateral racemes, on short branches or peduncles, each with 2 or 3 large pendulous flowers subtended by small bracts. Perianth densely covered with a loose reddish plumose wool, the tube broadly cylindrical, about 1 in. long, the erect lobes 2 to 3 lines long, glabrous inside. Anthers much shorter than the lobes. Style usually shortly protruding from the perianth.—Endl. in Pl. Preiss. ii. 24; *Conostylis canescens*, F. Muell. Fragm. viii. 19.

W. Australia. Swan river, *Drummond*, 1*st coll. n.* 748, *Preiss*, *n.* 1410.

6. ANIGOZANTHOS, Labill.

(Schwægrichenia, *Spreng.*)

Perianth persistent, the tube much elongated above the ovary, often recurved at the end, the limb more or less oblique; lobes 6, lanceolate, almost induplicate valvate, equal or those on the lower side more deeply separated and the tube usually split open between them sometimes almost to the base. Anthers oblong or linear, on short filaments at the orifice of the tube, the cells free at the base only. Ovary wholly inferior, 3-celled, the summit flat or conical; style long, filiform,

slightly clavate and stigmatic at the end. Ovules several, usually numerous in each cell, irregularly arranged or crowded on a projecting placenta. Capsule opening at the apex in 3 small valves. Seeds usually few, with a hard rugose or striate testa.—Herbs with a perennial usually horizontal thick rhizome. Leaves chiefly radical or nearly so, with a sheathing base, and linear lamina, either laterally flattened or nearly terete. Stems erect, usually bearing two or three smaller distant leaves. Flowers large, in close unilateral spikes or racemes, at the end of the simple stem or of the branches of a dichotomous spreading panicle. Perianth and inflorescence densely covered with a red green or yellow plumose wool; the stems sometimes, the leaves very rarely, bearing a shorter or looser tomentum, the leaves more frequently glabrous.

The genus is limited to West Australia. The derivation of the name has been frequently discussed, supposing it to have been taken from *ἀνίσχω* or *ἀνοίγω*, with meanings very inapplicable; it was, however, much more simple. Labillardière intending to express the unequal or oblique flower, *ἄνισος*, *ἄνθος*, merely changed the first s into a g, and the second into a z, for euphony sake.

Sect. 1. **Dianthesis.**—*Racemes or spikes several, in a divaricate dichotomous panicle. Anthers inappendiculate. Ovules 2 to 4 in each cell. Stems tomentose from the base.*

Leaves glabrous. Flowers red or of a pale or greenish yellow . 1. *A. rufa.*
Leaves mostly tomentose. Flowers of a rich yellow . . . . 2. *A. pulcherrima.*

Sect. 2. **Ceratandra.**—*Racemes or spikes several, in a divaricate panicle or 2 on a once-forked rhachis. Anthers tipped with a gland-like appendage. Ovules rather numerous in each cell. Stems glabrous at the base.*

Racemes or spikes several, in a divaricate dichotomous panicle. Perianth moderately curved . . . . . 3. *A. flavida.*
Racemes 2 of 2 or 3 flowers each on a once-forked rhachis. Perianth very much curved, with a very oblique limb . . . . 4. *A. Preissii.*

Sect. 3. **Haplanthesis.**—*Racemes or spikes single or rarely 2, on a simple or rarely once-forked rhachis. Anthers inappendiculate. Ovules numerous and crowded in each cell.*

Perianth (under 2 in.) incurved, not contracted above the middle, redder upwards than at the base. Anthers shorter than the filaments. Leaves rather broad . . . . . 5. *A. humilis.*
Perianth (nearly 3 in.) green, rarely yellowish throughout, not contracted above the middle. Anthers as long as the filaments. Leaves very narrow . . . . . 6. *A. viridis.*
Perianth (about 3 in.) green with a red rarely yellow base, not contracted above the middle. Anthers much longer than the filaments. Leaves rather broad . . . . . 7. *A. Manglesii.*
Perianth (2 to 3 in.) green with a red rarely yellow base, much contracted above the middle. Anthers as long as the filaments. Leaves very narrow . . . . . 8. *A. bicolor.*

Sect. 1. Dianthesis.—Racemes or spikes several, in a divaricate dichotomous panicle. Anthers not appendiculate. Ovules 2, rarely 3 or 4 in each cell. Stems tomentose from the base.

1. **A. rufa,** *Labill. Voy.* i. 411, t. 22, *Pl. Nov. Holl.* ii. 119. Rhizome horizontal, thick and woody. Radical leaves above 1 ft. long, flat but

rather thick, about 2 lines broad, glabrous when full grown, the margins usually scabrous. Stem or leafy scape 3 to 5 ft. high, densely covered from the base with a short soft plumose tomentum, bearing a few short leaves, branching at the top into a broad dichotomous panicle, with a small lanceolate bract under each branch. Flowers on very short pedicels, in close unilateral racemes on the ultimate branches of the panicle, covered as well as the whole inflorescence with a plumose wool assuming a red or rich purple colour rarely varying to a brown or pale yellow. Perianth-tube including the adnate base about 1 in. long, with reflexed hairs or linear-ciliate scales inside below the middle; lobes lanceolate, 4 to 5 lines long, oblique but not so much so as in *A. Preissii*. Anthers oblong, without any terminal appendage, much shorter than the filiform filaments. Ovary short, with only 2 reflexed ovules to each placenta in all the flowers opened, the free summit very shortly conical.—R. Br. Prod. 301; Endl. in Pl. Preiss. ii. 25; *Schwægrichenia rufa*, Spreng. Syst. ii. 26; *A. tyrianthina*, Hook. Bot. Mag. t. 4507, copied into Lem. Jard. Fleur. t. 40 with an alteration of tint.

W. Australia, Lucky bay, *R. Brown;* King George's Sound from the Kalgan to Cape Riche, *A. Cunningham, Drummond, n.* 327, *Preiss, n.* 1412, *Oldfield.*

2. **A. pulcherrima,** *Hook. Bot. Mag.* t. 4180 *copied into Fl. des Serres*, April, 1846. Very closely allied to *A. rufa*, the inflorescence and flowers the same in structure and indumentum, but the leaves are tomentose as well as the scape, and the wool of the flowers is of a bright yellow, sometimes slightly tinged with red. I find usually 2 perfect ovules to each placenta, but with the addition of 1 or 2 apparently abortive ones.

W. Australia, *Drummond, n.* 347.

Sect. 2. Ceratandra.—Racemes or spikes several in a divaricate dichotomous panicle, or 2 on a forked rhachis. Anthers tipped with a gland-like appendage. Ovules rather numerous in each cell. Stems glabrous at the base.

3. **A. flavida,** *Red. Lil.* t. 176. Rhizome thick, with long radical leaves, and a stem of 3 or 4 ft., bearing a divaricately-branched dichotomous panicle as in *A. rufa*, but the leaves longer broader and thinner, attaining 3 to 4 lines in breadth and the stem at the time of flowering quite glabrous almost up to the panicle as well as the leaves, the panicle plumose-woolly as in that species. Flowers in one-sided racemes on the branches of the panicle, on pedicels of 1 to 2 lines, subtended by small narrow bracts, the wool of a dull yellowish green more or less red at the base of the perianth and sometimes a brown red nearly to the top. Perianth-tube about 1¼ in. long, glabrous and shining inside or minutely scabrous-dotted; lobes 4 to 5 lines long, pubescent inside, the lower ones more deeply divided than the upper. Anthers oblong-linear, almost as long as the filaments, the connective tipped with a small gland-like appendage. Ovules rather numerous in each

cell, crowded on oblong placentas. Capsule ovoid, 4 or 5 lines long, the conical summit within the perianth opening in 3 short valves.—Endl. in Pl. Pr. ii. 27; Bot. Mag. t. 1151; Bot. Reg. 1838, t. 37, and 64; *Schwægrichenia flavida*, Spreng. Syst. ii. 26; *A. grandiflora*, Salisb. Parad. Lond. t. 97; *A. coccinea*, Paxt. Mag. v. 271, with a plate; *A. Manglesii*, Maund, Botanist, t. 67, not of Don.

W. Australia. King George's Sound and adjoining districts, *R. Brown, Drummond, n.* 348, *Preiss, n.* 1411 *and* 1416, and many others; Blackwood river, *Oldfield;* Geographe bay, *Fraser;* Cape Naturaliste and Swan river, *Drummond, 1st coll. n.* 746; Hampden, *Clarke.*

The species varies in the size of the flower, and very much in the colour of the wool, sometimes almost entirely red, sometimes green without any admixture of red, rarely with much of yellow.

4. **A. Preissii,** *Endl. in Pl. Preiss.* ii. 26. Stems 1 to 1½ ft. high, more or less clothed with a loose plumose reddish wool, more dense and redder towards the inflorescence. Leaves from a long sheathing base tapering into a narrow almost terete acuminate lamina, the lower ones 6 in. long or rather more, the upper ones smaller and distant, all glabrous. Flowers few, usually 3 to 6 on the short branches of the once-forked terminal peduncle, sometimes the whole inflorescence reduced to 2 or 3 flowers, and always appearing capitate when in young bud, although the pedicels ultimately attain 2 to 3 lines each subtended by a small bract. Perianth at least 2 in. long, very much curved in the bud, and the limb more oblique than in the other species, the adnate base very soon globular, the whole perianth densely plumose-woolly outside and usually more or less red, glabrous inside; lobes narrow-lanceolate, nearly ¾ in. long, the lower ones separated much lower down, and the tube often splitting between them. Anthers not very long, the connective tipped with a small gland-like appendage as in *A. flavida*. Ovules rather numerous, reflexed and irregularly crowded on the face of the placenta. Capsule globular, 5 lines diameter including the adnate perianth-base, opening at the top within the perianth in 3 very small rigid valves.—*A. minima*, Lehm. Pl. Preiss. ii. 274?

W. Australia. King George's Sound and adjoining districts, *Preiss, n.* 1413, *F. Mueller, Maxwell.*

F. Mueller, Fragm. viii. 23, places this species amongst those with simple inflorescence. I have, however, always found it once forked, except when reduced to 2 or 3 flowers, and then one of the pedicels seems to be rather a 1-flowered branch than a simple pedicel. The inflorescence in many specimens not yet fully developed appears capitate.

Sect. 3. Haplanthesis.—Racemes or spikes single at the end of the stems with a simple rhachis, or rarely 2 the rhachis being once-forked, always unilateral several-flowered and rather dense. Anthers not appendiculate. Ovules numerous in each cell crowded on the placenta.

5. **A. humilis,** *Lindl. Swan Riv. App.* 46, t. 6 B. Rhizome thick, horizontal. Stems usually under 1 ft., rarely 1½ ft. high, loosely plu-

mose-woolly. Leaves chiefly radical, usually ciliate only with plumose hairs, but sometimes woolly-hairy all over or quite glabrous, flat, usually under 6 in. long and 2 to 3 lines broad but variable. Flowers nearly sessile in a simple terminal unilateral spike, or very rarely the rhachis once-forked forming a double spike, the pedicels rarely above 1 line long, the plumose wool red varying to a pale yellow and mixed with longer hairs. Perianth 1½ to 2 in. long, slightly curved, the limb very oblique, the lobes falcate-lanceolate, 4 to 5 lines long, the lower ones shorter but more deeply separated than the upper, the tube readily splitting on the lower side almost to the base; filaments filaform; anthers short, without terminal appendages. Ovules numerous, covering the placentas.—Endl. in Pl. Preiss. ii. 26.

W. Australia. King George's Sound and adjoining districts, *F. Mueller*, *Oldfield*, *Maxwell*, and others; Swan river, *Drummond*, *1st coll. n.* 747, *Preiss*, *n.* 1418, *Oldfield*.

A. minima, Lehm. Pl. Preiss. ii. 274, which I have not seen, is referred by F. Mueller, Fragm. viii. 21, to *A. humilis*, but apparently only from the character given: the narrow leaves, almost capitate inflorescence, and curved perianth would rather indicate the *A. Preissii*.

6. **A. viridis,** *Endl. in Pl. Preiss.* ii. 25. Stems 1½ to 2 ft. high or more, glabrous or nearly so below the middle, loosely tomentose upwards. Leaves near the base of the stem from a broad sheathing base linear-subulate, 6 to 10 in. long. Flowers in a compact simple or unilateral terminal raceme, or rarely the rhachis once-forked forming a double raceme, the pedicels 1 to 3 lines long subtended by short linear-subulate bracts, the wool green throughout or yellowish towards the base of the flower. Perianth 2½ to near 3 in. long, the tube of equal breadth or very slightly contracted above the middle, splitting open on the lower side to near the base, with reflexed hairs or scales inside near the base, the limb not very oblique, the lobes 4 to 5 lines long, usually reflexed when open. Anthers linear, about as long as the filiform filaments. Ovules very numerous in each cell covering the placentas.

W. Australia. Swan river, *Drummond*, *1st coll. n.* 745, *Preiss*, *n.* 1415; Vasse river, *Oldfield;* Pinjarrah, *J. S. Price;* Busselton, *Pries.*

7. **A. Manglesii,** *D. Don in Sweet, Brit. Fl. Gard.* ser. 2, t. 265. Stems 2 to 3 ft. high, slightly and loosely woolly towards the base, more densely so under the inflorescence. Leaves at the base of the stem flat, 6 in. to above 1 ft. long, usually 2 to 3 lines but sometimes ½ in. broad, quite glabrous. Flowers, the largest in the genus, in a simple terminal unilateral raceme, on pedicels usually of 2 to 3 lines, the plumose wool very dense, green except on the adnate base where it is usually red or rarely pale yellow. Perianth at least 3 in. long rather narrow and slightly incurved but not contracted above the middle, the lobes narrow, 4 to 5 lines long, the tube usually splitting open on the under side nearly to the base, glabrous inside except the long recurved hairs or ciliate scales near the base. Anthers linear much longer than

the short flat filaments, the connective without any appendage. Ovules numerous in each cell, covering the placentas.—Bot. Reg. t. 2102 (the hairs or scales inside the base of the tube represented as curved upwards instead of downwards) Bot. Mag. t. 3875.

W. Australia. Swan river, *Drummond*, 1*st coll. n.* 744, *Oldfield* (*Preiss, n.* 1420 ?); Blackwood river, *Oldfield;* Busselton, *Pries;* King George's Sound, *Baxter*, also *Drummond;* Lake Muir, *Muir* (the latter two with the base of the perianth of a dull yellowish white in the dried specimens); Gordon river, *Herb. F. Mueller* (with the raceme nearly 1 ft. long, the pedicels ½ in., the base of the perianth of a rich red).

8. **A. bicolor,** *Endl. in Pl. Preiss.* ii. 26. Resembles *A. Manglesii* and *A. humilis* in habit and in the red base of the otherwise green perianth, but readily distinguished from both by the shape of the flower. It is usually of the low stature of *A. humilis*, rarely much above 1 ft. high. Leaves chiefly at the base of the stems, glabrous, under 6 in. long, narrower and more tapering to the point than in *A. humilis*. Flowers 4 to 10, on pedicels of 2 to 4 lines in a close unilateral raceme, the rhachis simple in all the specimens seen, the wool of the adnate base of a rich red, the remainder green. Perianth 2 to near 2½ in. long, the tube at the base as broad as the adnate part but tapering towards the middle and much contracted in the upper half, much incurved at the end in the bud, the limb oblique, the lobes about 4 lines long, and the tube usually split open on the lower side to near the base. Anthers linear, but shorter than in *A. Manglesii*, on filiform very unequally inserted filaments. Ovules numerous in each cell, covering the placenta.

W. Australia. Kalgan, Perongerup, and other localities in the neighbourhood of King George's Sound, *Preiss, n.* 1417, *Oldfield, F. Mueller, Muir, Miss Warburton.*

Var. *minor*. Leaves under 3 in. long. Scape about 6 in., the perianth scarcely more than 1½ in. long.—M'Callum and Stokes inlets, *Maxwell.*

Var. *major*. Perianth fully 2½ in. long and rather less contracted above the middle. —Swan river, *Drummond*, 1*st coll*, *Fraser*, and an unknown collector who gathered it in 1839 and named it in Herb. Hooker *A. Mooreana*, mihi; Albany, *F. Mueller.*

7. MACROPODIA, Drumm.

Perianth persistent, the tube much elongated above the ovary, recurved and dilated at the end, the limb very oblique; lobes 6, lanceolate, almost induplicate-valvate, those on the lower side more deeply separated and the tube split open between them. Anthers oblong-linear, on slender filaments at the orifice of the tube, the cells free at the base only. Ovary superior, 3-celled, with thick double dissepiments, the summit scarcely prominent within the perianth. Style long, filiform, slightly clavate and stigmatic at the end. Ovules solitary in each cell, laterally attached. Fruit dry, not valvular, the seeds falling away separately with portions of the pericarp and adnate perianth-base, leaving the thick hardened dissepiments persistent with the axis. Testa somewhat crustaceous.—Herb with the habit and inflorescence of the paniculate *Anigozanthi.*

The genus is limited to a single species, endemic in West Australia. It is reunited with *Anigozanthos* by F. Mueller, notwithstanding the remarkable differences in the ovary and fruit.

1. **M. fumosa,** *Drumm. in Hook. Kew Journ.* vii. 57. Rhizome very short and thick. Leaves radical or nearly so, not above 1 ft. long, laterally flattened, often ½ in. broad, tapering to a fine point, of a rather thin consistence with acute edges. Stem stout, 3 to 4 ft. high, glabrous except the inflorescence, which is dichotomous but with few rather long branches, densely covered as well as the buds with a plumose wool very dark when fresh and black when dry; on the expanded flower the black wool is more scattered or entirely disappears leaving a closer but dense yellowish or whitish tomentum. Flowers almost sessile in dense unilateral spikes on the branches of the panicle. Perianth-tube about ¾ in. long, much incurved and expanded into the limb; lobes very oblique, nearly 1 in. long. Filaments almost as long as the lobes; anthers oblong-linear and tipped with a small gland-like appendage as in *Anigozanthos flavidus* and *A. Preissii.*—*Anigozanthos fuliginosus,* Hook. Bot. Mag. t. 4291.

W. Australia Moore river, *Drummond;* Hill river, *Oldfield;* Greenough flats, *C. Gray.*

Tribe 3. Hypoxideæ.—Rhizome or base of the stem short and thick, emitting thick fibrous roots and sometimes covered with the membranous or fibrous sheathing bases of old leaves so as to resemble bulbs. Leaves radical, horizontally flattened or rarely terete. Flowers solitary or in simple spikes or racemes. Perianth hairy or rarely glabrous. Seeds with a black crustaceous tuberculate or striate testa, the hilum produced into a hooked beak at the end of which the funicle is attached.

8. CURCULIGO, Gærtn.

Perianth persistent or at length withering away, the tube more or less elongated above the ovary (except in *C. recurvata*), the limb of 6 spreading nearly equal segments. Stamens 6, inserted at the mouth of the tube; anther-cells more or less free at the base. Ovary 3-celled, with numerous ovules in two rows in each cell. Style connate with the perianth-tube, shortly free above it with 3 erect or connate stigmatic lobes papillose outside. Fruit succulent, sessile within a sheathing bract. Seeds few, the testa striate, the funicle usually dilated.—Herbs with a thick rhizome and long flat or plicate-nerved radical leaves. Scapes very short or rarely longer than the spike. Flowers in short spikes or heads, each one subtended by a broad sheathing bract longer than the ovary and fruit.

The genus extends over tropical and Southern Africa and Asia, with one American species. Both the Australian species have a wide range over tropical Asia.

Leaves broad. Flowers in a dense nodding head on a scape of several inches. Perianth-tube scarcely any . . . . . 1. *C. recurvata.*
Leaves narrow. Flowers in an almost sessile spike. Perianth-tube filiform . . . . . 2. *C. ensifolia.*

1. **C. recurvata,** *Ait. Hort. Kew.* ed. 2, ii. 253. Rhizome thick, with densely clustered fibrous roots. Leaves radical, glabrous or nearly so, the petioles 6 in. to near 1 ft. long with a broad sheathing base, the lamina oblong-lanceolate, 1 to 3 ft. long, strongly ribbed and plicate. Scapes densely woolly, from scarcely above ground to 6 to 8 in. high, recurved under the inflorescence. Spike or head of flowers nodding, very dense, ovoid or nearly globular, 1 to 2 in. diameter, with broadly lanceolate imbricate striate more or less woolly-hairy bracts, the outer ones usually empty and sometimes above 1 in. long, the upper ones subtending the flowers shorter. Perianth very woolly-villous on a short thick pedicel; segments of the limb ovate, spreading, 3 to 4 lines long, glabrous inside, separated almost to the ovary or united at the base in an exceedingly short ring. Filaments very short, the anthers oblong and erect, connivent into a cone round the style, which is slender slightly dilated and minutely 3-lobed at the stigmatic end. Capsule nearly globular, more or less succulent, softly hairy, about 3 lines diameter. Seeds globular, with a black rugose crustaceous testa.—Bot. Reg. t. 770.

Queensland. Rockingham bay, *Dallachy.*—The species extends over the eastern provinces of India and the Archipelago. Technically, the absence of any tube to the perianth above the ovary might place this species rather in *Hypoxis* than in *Curculigo;* but the inflorescence and other characters render it impossible to separate it generically from the closely allied *C. sumatrana,* which is in every respect a true *Curculigo.*

2. **C. ensifolia,** *R. Br. Prod.* 290. Stem short, produced into a descending rhizome with fibrous roots, and more or less covered with the scarious sheathing bases of old leaves. Leaves usually 6 to 9 in. long and $\frac{1}{4}$ to $\frac{1}{2}$ in. broad in the middle, but sometimes 1 to $1\frac{1}{2}$ ft. long and almost $\frac{3}{4}$ in. broad, tapering at both ends, with prominent nerves and more or less hairy especially towards the base. Spikes short and erect at the base of the leaves, the scarious sheathing bracts subulate-acuminate, often 1 in. long. Ovary almost sessile, elongated, enclosed in the bract. Perianth-tube filiform, hairy, $\frac{1}{2}$ to $\frac{3}{4}$ in. long above the ovary; segments of the limb usually 3 to 4 lines long, with lanceolate-pointed segments more or less hairy outside. Filaments short; anthers linear, the parallel cells shortly free at the base. Style column very short below the stigmas, which are as long as the anthers and connate or shortly free at the top. Capsule oblong, enclosed in the sheathing bract. Seeds several, the black testa elegantly striate but not tubercular.—*C. stans,* Labill. Sert. Austr. Caled. 18, t. 24; *C. orchioides,* Miq. Fl. Ind. Bat. iii. 585 and others, but not of Roxb.

Queensland. Prince of Wales and other islands off Cape York, *R. Brown;* Wide bay, *Leichhardt;* Rockingham bay, *Dallachy;* Fitzroy island, *C. Walter;* Broad Sound, *Bowman;* Keppel bay, *Thozet*; Moreton bay, *C. Stuart.*

N. S. Wales. Macleay river, *Beckler.*

The species has a wide range in eastern tropical Asia, for I can find no difference in the numerous specimens I have seen from Australia, New Caledonia, the Indian Archipelago, Bengal, China, and Japan. The Asiatic ones have been generally referred to the *C. orchioides,* Roxb. Corom. Pl. i. 14, t. 13, and I had myself considered them as a small variety of that species in the Hongkong Flora, p. 366 (where, however, I had by

mistake described the perianth segments as 5 to 6 lines long instead of 3 to 4); but upon a more careful comparison with Roxburgh's plate and description, and with specimens probably authentic from Rottler's herbarium, it appears that the latter may be a distinct larger-flowered species of limited range in the Indian Peninsula, and possibly the same as Wight's *C. malabarica*. The South American (Guiana and W. Indian) *Hypoxis scorzonerifolia*, Lam., is scarcely distinguishable from the true *Curculigo ensifolia*, although for reasons unexplained it is still retained in *Hypoxis* by Seubert in the great Flora Braziliensis.

Var. *longifolia*. This may prove to be a distinct species if the characters are found constant. It is more slender and nearly glabrous. Leaves rigid, 1½ ft. long and only 3 to 4 lines broad in the broadest part, tapering into a long point and into a still longer petiole. Spike loose and elongated, each flower with its spatha or sheathing bract on a pedicel of ¼ in. or rather more. Perianth-tube not so slender as in the typical form, but the segments of the limb the stamens style and fruit quite those of *C. ensifolia*.

N. Australia. Port Darwin, *Schultz, n.* 781.

9. HYPOXIS, Linn.

Perianth persistent, divided to the ovary into 6 rarely 4 nearly equal spreading segments. Stamens 6, rarely 4, inserted at the base of the segments; anthers oblong or linear, more or less lobed at the base. Ovary 3-celled rarely 2-celled, with many ovules in 2 rows in each cell. Style short, with 3, rarely 2, oblong or linear erect stigmas connate or free, papillose outside. Capsule globular oblong or linear, crowned by the persistent perianth, which (usually but not always in the Australian species) "at length falls off, carrying with it the top of the capsule, this then bursts into 3 valves and scatters the seeds." Seeds globular, with a crustaceous tubercular testa, the hilum prominent and hooked. —Herbs with bulbous or tuberous rhizomes, covered with sheathing membranous or fibrous scales. Leaves radical, flat or terete, usually hairy. Scape leafless or with a single sheathing leaf. Flowers white or yellow, solitary or few in a short raceme.

The genus is spread over tropical Asia and Africa, more abundant in South Africa, with two or three American species. Of the six Australian species, one is also in New Zealand, the others are all believed to be endemic.

Capsule globular or oblong, not above twice as long as broad.
- Anthers deeply divided at the base . . . . . 1. *H. hygrometrica.*
- Anthers scarcely or very shortly lobed at the base.
  - Perianth-segments 3 to 5 lines long. Stamens nearly equal. Capsule ovoid or oblong . . . . . 2. *H. glabella.*
  - Perianth-segments scarcely 2 lines long. Stamens alternately shorter. Capsule small, globular . . . . . 3. *H. pusilla.*

Capsule linear, 4 or 5 times as long as broad.
- Leaves subulate. Stamens alternately longer. Stigmas long and narrow . . . . . 4. *H. leptantha.*
- Leaves linear-terete. Stamens nearly equal. Stigmas short 5. *H. occidentalis.*
- Leaves narrow-linear but flat with prominent nerve-like margins . . . . . 6. *H. marginata.*

1. **H. hygrometrica,** *Labill. Pl. Nov. Holl.* i. 82, t. 108. Rhizome thickened into a small tuber emitting thick clustered roots and covered at the top by the membranous leaf-sheaths not splitting into fibres. Leaves narrow-linear or almost filiform, from under 6 in. to nearly 1 ft.

long, usually sprinkled or ciliate with long slender hairs. Scape shorter than the leaves, almost filiform, from only 2 or 3 in. long with a single small flower, to near 6 in. with 2, 3, or very rarely more flowers. Ovary turbinate. Perianth yellow, the segments about 4 lines long in the common form but sometimes smaller, usually glabrous, the outer ones often darker coloured outside. Anthers deeply divided at the base into linear auricles. Style columnar, the stigmas ovate, erect, and connate. Capsule obovoid-globular, under 2 lines diameter. Seeds globular, elegantly tuberculate.—R. Br. Prod. 289; Hook. f. Fl. Tasm. ii. 36.

Queensland. Rockhampton, *O'Shanesy;* Armidale, *Perrott.*

N. S. Wales. Port Jackson to the Blue Mountains, *Sieber, n.* 153, *A. Cunningham,* and others; Gwydir river, *Leichhardt;* New England, *C. Stuart;* Clarence river, *Beckler.*

Victoria, *Harvey;* between Ballarat and Ballan, Loddon, *F. Mueller.*

Tasmania. Port Dalrymple, *R. Brown;* abundant throughout the island, ascending to 4000 ft., *J. D. Hooker.*

Var. *pratensis.* A small hairy slender variety, with 2 or 3 small flowers to the scape.—*H. pratensis,* R. Br. Prod. 289.—Hunter's river, *R. Brown;* New England, *C. Stuart, Leichhardt;* Rockhampton, *Thozet.*

Var. *elongata.* A larger hairy variety. Leaves flatter, often above 1 line broad. Flowers 2 to 5, each subtended by a subulate bract. Perianth-segments fully 5 lines long.—Rockhampton, *Thozet, O'Shanesy;* Nerkool Creek, *Bowman;* Moreton bay and Condamine river, *Leichhardt;* Dawson river, *F. Mueller;* New England, *C. Stuart.*

2. **H. glabella,** *R. Br. Prod.* 289. The whole plant quite glabrous. Rhizome globular, bulb-like, covered with the fibrous remains of old leaf-sheaths. Leaves linear-subulate, terete or channelled above, expanded at the base into a narrow scarious sheath, the lamina varying from 2 to 3 in. long in some specimens, above 6 in. in others. Scape shorter than the leaves, with a long linear erect sheathing bract at or below the middle. Ovary oblong-turbinate. Perianth very variable in size, the segments from 3 to 5 lines long, but usually about 4 lines. Stamens nearly equal; anthers entire at the base or with exceedingly short obtuse auricles. Style-column shorter than the erect free stigmatic lobes. Capsule ovoid or oblong, but not above twice as long as broad when ripe.—Hook. f. Fl. Tasm. ii. 36, t. 130 A; *H. vaginata,* Schlecht. Linnæa, xx. 568.

Queensland? A specimen marked Warwick, *Beckler,* in Herb. F. Mueller appears to be this species.

Victoria. Port Phillip, *R. Brown;* Yarra-Yarra, Darebin Creek, *F. Mueller;* Werribee, *Fullagar.*

Tasmania. Abundant in pastures, &c., *J. D. Hooker.*

S. Australia. Lofty and Bugle ranges, Guichen bay, &c., *F. Mueller;* Yorke Peninsula, *Fowler.*

W. Australia? Specimens from Swan river, *Preiss, n.* 1601, referred here by Endl. in Pl. Preiss. ii. 14, have the longer stigmas of this species, but may yet perhaps belong to *H. occidentalis.* Specimens in flower only, without leaves or bulbs, from Greenough flats, *C. Gray,* have also the long stigmas of this species, but the anthers lobed at the base as in *H. hygrometrica.* The variety will require further investigation from complete specimens.

3. **H. pusilla,** *Hook. f. Fl. Tasm.* ii. 36, t. 130 B. A much smaller plant than *H. glabella,* with a similar globular bulb-like rhizome covered

with fibrous scales, but somewhat larger in proportion. Leaves filiform, rarely above 3 in. long, with short scarious sheathing bases. Scapes rarely 1 in. long, usually with 2 small setaceous bracts above the middle, and therefore perhaps sometimes 2-flowered, but only 1-flowered in all our specimens. Perianth-segments scarcely 2 lines long. Anthers shorter than in *H. glabella*, almost entire at the base, and 3 alternate stamens usually shorter than the others. Capsule globular, nearly 1½ lines diameter, constricted under the perianth.

Victoria. Wendu Vale, *Robertson;* the capsule rather more obovoid, but distinctly contracted into a short neck.
Tasmania. Circular Head, *Gunn.*

The species is also in New Zealand.

4. **H. leptantha,** *Benth.* A small species, with the subulate leaves, short slender scapes with setiform bracts of *H. pusilla*, and the stamens as in that species alternately smaller with shorter anthers, but the ovary and capsule are long and narrow, the perianth-segments narrower and more acute, the inner ones considerably smaller than the outer, and the stigmatic lobes long and narrow.

W. Australia, *Drummond, Oldfield;* Greenough flats, *C. Gray;* Upper Hay river, *Miss Warburton.*

Should the characters derived from the inequality of the inner and outer perianth-segments and stamens, and the length of the stigmatic lobes prove to be inconstant, this may have to be reduced to a variety of *H. occidentalis.*

5. **H. occidentalis,** *Benth.* Nearly allied to *H. glabella*, equally glabrous, with a bulb-like rhizome and narrow leaves with scarious sheathing bases, and the scape with a sheathing almost leafy bract at or below the middle, but the ovary and capsule very differently shaped, the ripe capsule linear, often ½ in. long and very narrow. Perianth-segments 3 to 4 lines long, the inner ones rather smaller than the outer; the parts of the flower frequently but not constantly reduced from 6 to 4. Anthers linear, very shortly lobed at the base. Styles very short, with lanceolate papillose almost plumose lobes, scarcely exceeding the filaments.

W. Australia. King George's Sound and adjoining districts, *F. Mueller, Muir, Miss Warburton.*

6. **H. marginata,** *R. Br. Prod.* 289. Leaves slightly hairy, flat though very narrow, the longest 1½ ft. long, but some only 2 or 3 in., about 1 line broad, all with prominent nerve-like margins. Scapes filiform, 1-flowered, 2 to 4 in. long, with very long fine spreading hairs under the flower and upon the ovary. Capsule linear, nearly ½ in. long and very narrow.

N. Australia. Islands of the Gulf of Carpentaria, *R. Brown.*
The specimens are very few, but quite distinct from any others known to me, whether from India or the other parts of Australia. An imperfect specimen, however, from Port Darwin, *Schultz, n.* 641, appears very nearly allied to it; it has only one imperfect small leaf, and I do not see the long hairs of *H. marginata.* The scape bears two flowers, one, already in fruit, has the long narrow capsule of *H. occidentalis* and *H. marginata.*

Tribe 4. Agaveæ.—Tall often woody plants. Radical leaves usually numerous, either flat and thick or channelled or terete; stems also frequently leafy. Flowers usually large in terminal compound heads or thyrsoid panicles. Perianth glabrous, very petaloid, usually large.

10. DORYANTHES, Corr.

Perianth of 6 nearly equal deciduous segments spreading from near the base; the 3 inner ones slightly dilated at the base. Stamens 6; filaments linear-subulate or slightly dilated at the base; anthers elongated, the basal lobes closing over the filament. Style elongated, 3-furrowed, with an obtuse terminal 3-angled stigma. Capsule oblong-clavate or turbinate, with a woody endocarp opening loculicidally in 3 valves. Seeds flat, reniform, in 2 rows in each cell.—Very tall herbs, with clustered roots and very long and numerous radical leaves. Stems simple, with short leaves. Flowers large, red, in short spikes collected into a large terminal globose head or oblong thyrsus.

The genus is limited to Australia. Its nearest connexions are South African and American.

Flower-head nearly globular, 1 ft. diameter. Perianth-segments oblong-linear, 4 in. long . . . . . 1. *D. excelsa.*
Flower-thyrsus oblong, 3 ft. long. Perianth-segments oblong-lanceolate, 2 in. long . . . . . 2. *D. Palmeri.*

1. **D. excelsa,** *Correa in Trans. Linn. Soc.* vi. 213, t. 23, 24. Radical leaves "above 100," about 4 ft. long, "broadly sword-shaped." Stem attaining 10 to 18 ft., with numerous short linear-lanceolate erect leaves sheathing at the base. Flowers red, in a dense terminal globular head of 1 ft. diameter, surrounded by a few green acuminate leafy bracts or floral leaves, the spikes or clusters within the head of 3 or 4 flowers each, subtended by coloured lanceolate bracts, the rhachis 1 to 2 in. long, with an oblong or lanceolate coloured bract under each flower. Pedicels short and thick. Ovary or adnate perianth-tube about 1½ in. long; segments of the limb about 4 in. long, broadly oblong-linear, obtuse, thick, concave and undulate, nearly erect quite at the base, then spreading or recurved. Filaments about 3 in. long, adnate to the perianth at the base; anthers above 1 in. long.—R. Br. Prod. 298; Bauer Illustr. Pl. N. Holl. t. 12 to 14; Bot. Mag. t. 1685.

N. S. Wales. Port Jackson, *Bass;* George's river, *R. Brown;* Newcastle, *Leichhardt.*—W. Hill mentions a white-flowered variety which he found on Mount Lindsay.

2. **D. Palmeri,** *W. Hill.* Radical leaves "above 100," 5 to 6 ft. long and 2 to 2½ in. broad in the broadest part. Stem 6 to 8 ft. high, with linear-lanceolate acute leaves like those of *D. excelsa.* Flowers red, in an oblong terminal thyrsus about 3 ft. long, the rhachis and bracts of the same rich colour as the flowers, the spikes not close together, each with a thick short rhachis bearing 3 or 4 flowers. Bracts acuminate, the outer one of each spike as long as the flower, those subtending the flowers short. Perianth-segments oblong-lanceolate, pale

or white inside below the middle, about 2 in. long, spreading from near the base. Filaments thicker at the base than in *D. excelsa*, and as well as the anthers much shorter than in that species.

Queensland. Mount Spicer near Cunningham Gap, *W. Hill;* Mackenzie river, *Hartmann.*—The above character is taken chiefly from W. Hill's description, and the drawings made by Miss Scott, from the specimen exhibited at Brisbane in 1870, confirmed by specimens of portions of the inflorescence.

Tribe 5. Euamaryllideæ.—Bulbous plants with horizontally flat channelled or terete radical leaves. Scapes leafless. Flowers in umbels or rarely solitary, surrounded by 2 or more membranous or coloured bracts. Perianth glabrous, often large. Stigma small.

11. CRINUM, Linn.

Perianth deciduous, slightly oblique, with a slender tube and 6 nearly equal lanceolate or oblong lobes. Stamens 6, inserted at the base of the lobes; filaments slightly dilated at the base; anthers linear or oblong, 2-lobed at the base. Style filiform, obtuse, with a terminal slightly 3-furrowed stigma. Ovary 3-celled, with several ovules (10 to 12 in the Australian species examined) in each cell, in 2 rows, bordering a narrow peltate placenta. Capsule often oblique and opening irregularly, with few rather large seeds.—Bulbous herbs usually tall. Leaves all radical, long, flat or channelled. Scape simple, leafless. Flowers large, mostly white, in a terminal umbel surrounded by a few membranous or slightly coloured bracts.

The genus extends over tropical and southern Africa and Asia. Of the five Australian species, one appears to be the same as a common Asiatic one, the four others are probably endemic.

Flowers sessile in the umbel or on pedicels shorter than the ovary.	
Filaments not ¼ as long as the perianth-lobes. Umbels few-flowered. Ovary usually beaked	1. *C. venosum.*
Filaments more than ⅔ as long as the lobes.	
Umbels many-flowered. Ovary usually beaked	2. *C. asiaticum.*
Umbels 1- or 2-flowered. Ovary not beaked	3. *C. uniflorum.*
Flowers on pedicels usually longer than the ovary, which is not beaked.	
Perianth-lobes about 3 in. long and ¾ to 1 in. broad . . .	4. *C. flaccidum.*
Perianth-lobes 2 to 2½ in. long and 3 to 5 lines broad . . .	5. *C. pedunculatum.*

1. **C. venosum,** *R. Br. Prod.* 297. Bulb and leaves not described, and none preserved to any of the specimens seen. Umbel of 6 to 8 flowers with 2 involucral bracts 2½ to 3½ in. long. Flowers sessile or here and there very shortly pedicellate, the ovary tapering at the top into a neck or beak, sometimes very short, sometimes longer than the ovary itself. Perianth-tube 3 to 4 in. long, the segments of the limb acuminate, 1½ to 2 in. long, 4 to 5 lines broad in the middle, not more conspicuously veined in the dried state than other species. Filaments 4 to 5 lines long; anthers nearly or quite as long.—Kunth, Enum. v. 567.

N. Australia. Coen river, Gulf of Carpentaria, *R. Brown;* Sweers island, *Henne.*

Queensland. Cumberland island, *R. Brown.*

2. **C. asiaticum,** *Linn.; Ker in Bot. Mag.* t. 1073. "Bulb produced into a column." Leaves long, attaining in the typical form a breadth of at least 2 in. Scape 1 to 2 ft. high. Flowers 8 to 20 or even more in the umbel, sessile or on pedicels shorter than the ovaries, the involucral bracts 2 to 4 in. long. Ovaries usually produced at the top into a beak varying from 2 or 3 lines to nearly 1 in. Perianth white, the tube above 3 in. long; segments of the limb 2 to near 3 in. long, acuminate, tapering at the base, 3 to 4 or rarely 5 lines broad in the middle. Filaments from $\frac{3}{4}$ the length to nearly the length of the segments, usually purple towards the base; anthers 3 to 4 lines long.—Kunth, Enum. v. 547; *C. arenarium,* Herb. in Bot. Mag. t. 2355; *C. australasicum,* Herb. Amaryll. 259, partly.

N. Australia, Victoria river, *F. Mueller;* Port Darwin, *Schultz, n.* 600.
Queensland. Rockingham bay, *Dallachy* (with shortly pedicellate flowers).

Var. *angustifolium.* Leaves under 1 in. broad.—*C. angustifolium,* R. Br. Prod. 297 partly; *C. confertum,* Herb. in Bot. Mag. t. 2522.—King's Sound, N.W. coast, *Chapman;* Adams bay, *Hulls;* Port Darwin, *Schultz, n.* 696; Port Denison, *Fitzalan;* Rockhampton, *O'Shanesy, Bowman.*

The specimen in Brown's herbarium, to which he has attached the label of *C. angustifolium,* appears to me certainly to belong to the narrow-leaved form of *C. asiaticum.* The marginal asperities described by him are distant, and appear occasionally but rarely on other specimens of *C. asiaticum.* In the same sheet are several specimens of *C. uniflorum,* to which the name of *C. angustifolium* would be more appropriate, but the leaves have no marginal asperities.

C. brachyandrum, Herb. in. Bot. Mag. under n. 2121, and Amaryll. 249, described from a single plant raised from tropical Australian seeds but since lost, should probably be reckoned amongst the varieties of *C. asiaticum.* The filaments, though said to be short, are described as very much longer than those of *C. venosum.*

3. **C. uniflorum,** *F. Muell. Fragm.* iii. 23. "Bulb ovate-globular." Leaves linear, long and flaccid, scarcely above 2 to 3 lines broad. Scape 6 in. to 1 ft. high, bearing only 1 or rarely 2 sessile or shortly pedicellate flowers enclosed in 2 bracts of about 2 in. Ovary not at all or scarcely contracted at the top. Perianth "white or slightly tinged with pink," the tube 4 to 5 in. long, recurved in the bud; segments of the limb $2\frac{1}{2}$ to 3 in. long, 4 to 6 lines broad in the middle. Filaments nearly as long as the segments; anthers long and narrow.

N. Australia. Coen river, Gulf of Carpentaria, *R. Brown;* Sweers island, *Henne.*

Queensland. Albany island, Cape York, *M'Gillivray;* sandy flats exposed to the sun, Somerset, Cape York, *Veitch.*

4. **C. flaccidum,** *Herb. in Bot. Mag. under n.* 2121 *and t.* 2133. Bulb not seen. Leaves as far as known elongated, varying in breadth from $\frac{1}{2}$ to 1 in. Scape $1\frac{1}{2}$ to 2 ft. high. Flowers white, usually 6 to 8 in the umbel, on pedicels varying from $\frac{1}{2}$ to 1 in., the bracts of the involucre much dilated at the base, 3 to 4 in. long. Ovary not beaked and scarcely contracted under the perianth. Perianth-tube 3 to 4 in.

long, the segments of the limb about 2½ to 3 in. long, and much broader than in any other Australian species, ¾ in. in some specimens, nearly 1 in. in others, the whole size of the flower evidently variable. Filaments from ⅔ to ¾ as long as the segments; anthers scarcely above 3 lines.—*Amaryllis australasica*, Ker in Bot. Reg. t. 426; *A. australis*, Spreng. Syst. ii. 54.

N. S. Wales. Darling river, *Mrs. Ford*, and thence to Cooper's Creek, *Victorian and other Expeditions;* Murray river, *C. Stuart;* "from the paddock of Mr. Bigge," *Leichhardt.*

S. Australia. Flinder's range, *F. Mueller;* in the interior, lat. 32° to 22°, *M'Douall Stuart.*

There is in the Banksian herbarium a specimen laid in as from New Holland, *R. Brown*, but no corresponding one in Brown's own herbarium. There may be therefore some mistake, for we have no evidence of the plant growing in those parts of Australia visited by R. Brown. *C. arenarium* β, Herb. in Bot. Mag. t. 2531, appears to me to represent the larger-flowered form of this species, which is that generally sent from the interior of N. S. Wales. F. Mueller's South Australian specimens belong to the smaller form figured Bot. Mag. t. 2133.

5. **C. pedunculatum,** *R. Br. Prod.* 297. Very near *C. asiaticum*, with apparently the same variation in the breadth of the leaf, and the flowers equally numerous in the umbel, but they are all on pedicels longer than the ovary, and the ovary is either not contracted at the apex or produced only into a very short beak. The perianth is also smaller, the tube rarely above 2 in. long, the segments about as long but usually very narrow.—*C. australe*, Herb. Amaryll. 246 (partly).

Queensland. Moreton bay, *Leichhardt?* in Herb. F. Mueller.

N. S. Wales. Port Jackson, *Backhouse;* Hastings river, *Beckler;* Glendon, *Leichhardt;* Springrove and Castlereagh river, *Herb. F. Mueller;* Lord Howe's island, *Fullagar.*

S. Australia. Murray river, *Behr;* Morunda to the eastern bend of the river, *F. Mueller.*

The figure of *C. pedunculatum*, Bot. Reg. t. 52, shows larger flowers and shorter pedicels than the dried specimens, and seems rather to represent the short-pedicellate form of *C. asiatica;* it was not drawn from any authentically Australian specimen. The *C. taitense*, Red. Lil. t. 408, referred here by Ker, appears also to represent the same variety of *C. asiaticum*. Some fragmentary specimens from Burnet, *Haly*, and Curriwillighie, *Dalton*, seem almost intermediate between *C. pedunculatum* and *C. asiaticum*. The wild specimens in herbaria are, however, so unsatisfactory, and the cultivated ones in gardens so frequently uncertain as to their origin, that the distinction of species can only be established by studying them in their native country.

12. EURYCLES, Salisb.

Perianth deciduous, funnel-shaped, with a slender but usually short tube and 6 nearly equal broad lobes. Stamens 6, inserted at the mouth of the tube; filaments united at the base or to above the middle in a corona, produced between the free parts of the filaments into 2 lobes and sometimes separating between the filaments so as to leave them free but dilated into lateral appendages; anthers 2-lobed at the base. Ovary 3-celled, with 2 ovules in each cell collaterally attached to an axile placenta. Style filiform, obtuse, with a terminal stigma. Fruit

more or less succulent, with 1 or few seeds.—Bulbous herbs. Leaves all radical, petiolate, the lamina broad with longitudinal rather distant veins and transverse veinlets between them. Scape leafless. Flowers usually white, in a terminal umbel surrounded by 2 or 3 membranous bracts.

The genus extends over some islands of the Indian Archipelago. Of the two Australian species, one has the general range of the genus, the other is endemic.

Leaves very broad and cordate. Corona not ¼ as long as the perianth-lobes . . . . . 1. *E. amboinensis.*
Leaves ovate, not cordate. Corona not ⅔ as long as the lobes 2. *E. Cunninghamii.*

1. **E. amboinensis,** *Loud. Encycl. Pl.* 242. "Bulb tunicate, brown." Leaves usually several, on rather long petioles, broadly ovate-cordate orbicular-cordate or almost reniform, often 8 to 10 in. long and as broad or broader, with numerous arcuate rather distant veins and transverse veinlets between them. Scapes 1 to 2 ft. high, bearing an umbel of numerous white flowers. Bracts of the involucre 2 or 3, shorter than the pedicels, which vary from ¾ to near 2 in. long, articulate immediately under the ovary. Perianth above 2 in. long, the lobes elliptical-oblong, rather longer than the tube. Corona 4 to 5 lines long, divided to below the middle into 6 lobes, each one divided at the apex into 2 lanceolate acuminate diverging lobes with the filament between them; stamens altogether shorter than the perianth.—Hook. Bot. Mag. under t. 3399; *Pancratium amboinense*, Linn., Red. Lil. t. 384; Bot. Mag. t. 1419; *Eurycles sylvestris*, Salisb. in Trans. Hort. Soc. i. 337; Kunth, Enum. v. 689, with several synonyms; *Pancratium australasicum*, Ker in Bot. Reg. t. 715; *Eurycles australasica*, Loud. Encycl. 242; *E. australis*, Schult. Syst. vii. 911; Kunth, Enum. v. 691.

Queensland. Island of Cairncross, *Veitch* (with flowers 2½ in. long); Rockingham bay, *Dallachy;* Mount Elliot, *Fitzalan.*—The species is also in the Indian Archipelago.

2. **E. Cunninghamii,** *Ait. MS.; Lindl. Bot. Reg.* t. 1506. Bulbs about 1 in. diameter. Leaves on long petioles, ovate, not cordate, but veined as in *E. amboinensis*, varying from 4 to 10 in. long. Scapes about 1 ft. high, with an umbel of 6 to 10 flowers surrounded by 2 or 3 bracts. Perianth 1 to 1¼ in. long, the tube rather shorter than the obovate-oblong lobes. Corona about ⅔ the length of the perianth, with 2 lanceolate lobes to each filament, and sometimes splitting lower down between them. Fruit apparently succulent, nearly globular, about ½ in. diameter, but not seen quite ripe.—Bot. Mag. t. 3399.

Queensland. Brisbane river, Moreton bay, *A. Cunningham, F. Mueller, Leichhardt, C. Stuart,* and others; Rockhampton, *Bowman.*

13. CALOSTEMMA, R. Br.

Perianth at length deciduous, with a slender but usually short tube and a funnel-shaped or spreading nearly equally 6-parted limb. Stamens 6, inserted at the mouth of the tube; filaments united to

about the middle in a tubular corona, truncate or shortly lobed between the free parts of the filaments; anthers 2-lobed at the base. Ovary 1-celled, with 2 or 3 ovules collaterally attached to one side of the cavity. Style filiform, obtuse, with a terminal stigma. Fruit globular, succulent, ripening usually only one rather large fleshy seed.—Bulbous herbs. Leaves all radical, narrow with close parallel veins or broad with more distant veins and transverse veinlets. Scapes leafless. Flowers variously coloured, smaller than in *Eurycles*, in a terminal umbel surrounded by 2 or 3 membranous bracts.

The genus is endemic in Australia. The remarkable reduction of the ovary to a single cell appears to be due to the early abortion of two of the carpels.

Leaves linear. Perianth-tube dilated under the limb.
Flowers purple or pink (rarely white?) . . . . . 1. *C. purpureum.*
Flowers yellow (rarely white) . . . . . 2. *C. luteum.*
Leaves ovate. Perianth-tube not dilated under the limb. Flowers white . . . . . 3. *C. album.*

1. **C. purpureum,** *R. Br. Prod.* 298. Bulb truncate attaining 1½ to 2 in. diameter. Leaves linear, usually developed after the flowering has commenced, sometimes very long, 2 to 4 lines broad, with close parallel veins. Scape attaining 1 to 2 ft., bearing an umbel of many flowers purple in the typical form but varying to pink or white. Bracts 2 or 3, acuminate, nearly equal or very unequal, the longest rarely exceeding the flowers and usually scarcely exceeding the pedicels. Pedicels ½ to near 1 in. long, the outer ones at length often articulate above the middle. Perianth-limb usually about 5 lines long, the slender tube varying from half as long to nearly that length, and slightly dilated at the top gradually expanding into the spreading limb; segments obovate-spathulate, varying in breadth. Corona reaching to about half the length of the segments, very variable in its orifice, sometimes truncate between the filaments and entire 2-toothed or shortly divided, sometimes produced between the filaments into 1 or 2 obtuse lobes.—Bot. Mag. t. 2100; Bot. Reg. t. 422.

S. Australia. Head of Spencer's gulf, *R. Brown;* Barossa, *Behr;* Bugle range, *F. Mueller;* Burra-Burra, *Hinteracker.*

Var. *carnea.* Flowers rather larger with a longer tube, approaching those of *C. luteum*, but pink or white.—*C. carneum*, Lindl. in Mitch. Three Exped. ii. 39; Bot. Reg. 1840, t. 26.

N. S. Wales. Lachlan river, *Mitchell;* Murrumbidgee river, *Herb. F. Mueller;* Charleville, *Giles;* Lower Edward river, *Mein.*

2. **C. luteum,** *Sims, Bot. Mag.* t. 2101. Habit leaves and inflorescence of *C. purpureum*, of which it may be a variety. Flowers rather larger, the perianth-limb often above ½ in. long, and yellow or rarely white. Corona usually truncate between the filaments or minutely toothed, but I have sometimes found it produced into short broad entire or notched lobes as in *C. purpureum.* Stamens often shortly exceeding the perianth.—Kunth, Enum. v. 688; Bot. Reg. t. 421 and 1840, t. 19; *C. candidum*, Lindl. in Mitch. Three Exped. i. 54; Kunth, l.c.

Queensland. Rockhampton, *Thozet, O'Shanesy;* Barcoo, *Schneider;* Darling Downs, *Law.*

N. S. Wales. Nammoy river, *Mitchell;* Liverpool Plains, *Leichhardt;* Castlereagh river, *Woolls;* Lower Darling river, *Mrs. Ford;* thence to Cooper's Creek, *Neilson;* Mount Murchison, *Bonney;* Mount Margaret, *M'Douall Stuart.*

The characters attempted to be drawn from the teeth of the corona and from the articulation or non-articulation of the pedicels vary in the same plant; the articulation appears only when the flowering is advanced; in some specimens I see no trace of it, in others it is very distinct upon some but not all of the pedicels.

3. **C. album,** *R. Br. Prod.* 298. Leaves resembling those of *Eurycles Cunninghamii*, but smaller, ovate, acute, tapering at the base, 3 to 5 in. long, 2 to 3 in. broad, with distant converging primary veins and transverse veinlets. Scapes 1 to 1½ ft. high, bearing an umbel of numerous white flowers on filiform pedicels of ½ to ¾ in. surrounded by 3 or 4 bracts. Perianth-tube narrow, 4 to 5 lines long; segments of the limb narrow, not quite so long as the tube, spreading from the base so as to give the flower a more hypocrateriform shape instead of the more funnel-shape of *C. purpureum* and *C. luteum*. Corona produced between the filaments into lanceolate entire or bifid lobes as long as the filaments. Fruit globular, rather large.

N. Australia. Turtle island, Gulf of Carpentaria, *R. Brown.*—A remarkable species with the flowers of *Calostemma* and the leaves of *Eurycles*.

Order CXXIV. TACCACEÆ.

Flowers hermaphrodite, regular. Perianth superior, persistent, tubular or campanulate, 6-lobed. Stamens 6, inserted in the tube, opposite to the lobes; filaments broad, hood-shaped, shortly 2-lobed at the end; anther-cells 2, parallel, adnate to the inside of the hood and projecting between the lobes. Ovary inferior, 1-celled, with 3 parietal placentas and many anatropous or amphitropous ovules. Style short, with a broad umbrella-shaped stigma deeply divided into 3 bifid lobes. Fruit a berry, crowned by the withered perianth. Seeds ovoid, many-ribbed; albumen copious, embryo minute, near the hilum when basal, at a distance from it if lateral.—Herbs with a perennial tuberous creeping or fibrous rhizome. Leaves radical, on long petioles, large and much divided, or in species not Australian undivided. Flowers on a radical scape in a dense terminal simple umbel, usually intermixed with long filaments (barren pedicels), and surrounded by an involucre of a few large thin bracts.

The Order is limited to a single genus, represented in the tropical regions of the New as well as the Old World. The only Australian species has a wide range over the Indian Archipelago and the Islands of the South Pacific.

1. TACCA, Forst.

Characters and distribution those of the Order.

1. **T. pinnatifida,** *Forst.; Kunth, Enum.* v. 458. Rhizome tuberous, globular, attaining under cultivation a large size but not above

1 in. diameter in the few dried specimens where it has been preserved. Petioles erect, 1 to 3 ft. long below the ramification, divided always into 3 branches which are again often bifid or trifid or dichotomous or irregularly branched, each branch pinnate with remarkably variable distant or more or less confluent segments. In the larger varieties the three branches are often 2 to 3 ft. long, once bifid or trifid, the larger segments ovate-lanceolate acuminate and 4 to 6 in. long, but intermixed with smaller ones, some of which often very small, obovate or oblong and very obtuse; some, whether large or small, contracted into a short petiolule and distant, others decurrent along the petiole, or confluent with the next segments. In another Australian form (*T. Brownii*, Seem. Fl. Vit. 100) the leaf-branches are under 1 ft. long, the segments all more or less lanceolate and acuminate but very unequal in size. In a third rather distinct Australian form (var. *aconitifolia*, F. Muell., *T. maculata*, Seem. Fl. Vit. 103) the leaves are more regularly divided, the branches almost dichotomous with numerous linear-lanceolate segments regularly diverging so as to form a circle of about 6 to 8 in. diameter. Scapes the length of the petioles, arising from within its sheathing base, with sometimes a scarious sheathing scale outside the petiole. Involucres of few (about 4 to 6) oblong or lanceolate obtuse or acuminate bracts of a thin texture, 1 to 2 in. long, but those of the same involucre very unequal and often 2 or 3 additional very small ones. Flowers numerous, on pedicels of $\frac{1}{2}$ to 1 in. and usually mixed with numerous long filaments or capillary barren pedicels 3 to 4 in. long. Perianth-segments in some specimens ovate and 2 lines long, in others lanceolate and 3 lines, but the difference owing sometimes to different stages of development, the inner lobes scarcely larger than the outer. Berry ovoid-globular, $\frac{3}{4}$ to 1 in. diameter, contracted into a short neck crowned by the persistent withered perianth limb.—R. Br. Prod. 340.

N. Australia. Islands of the Gulf of Carpentaria, *R. Brown, Sweers;* King's Sound, N.W. coast, *Hughan;* Sea range and Victoria river, *F. Mueller;* Melville island, *Fraser;* Port Darwin, *Schultz, n.* 169, 195, 810, 832; Escape Cliffs, *Hulls.*

Queensland. Rockingham bay, *Dallachy;* Fitzroy island, *C. Walter.*—Both the large form considered by Seemann as typical, and the one named by him *C. Brownii* occur both on the N. coast and in Queensland, with some intermediates as to foliage; the var. *aconitifolia* was sent by F. Mueller with the *C. Brownii*. We have no means of matching any differences in the flower with these differences in foliage.

Order CXXV. DIOSCORIDEÆ.

Flowers unisexual, usually dioecious, regular. Perianth superior, of 6 lobes or segments. Stamens 6 or 3, inserted on the perianth or in the centre of the flower round a rudimentary ovary, shorter than the perianth-lobes; anthers with 2 parallel cells opening inwards. Ovary inferior, 3-celled, with 2 pendulous ovules in each cell. Stigmas 3, entire or 2-cleft, on a single or distinct styles, or sessile on the ovary. Fruit a 3-angled capsule, opening at the angles in 3 loculicidal valves,

or an indehiscent berry. Seeds albuminous, with a minute embryo near the hilum.—Herbs often forming large tuberous rhizomes or woody half underground trunks, the stems usually slender long and twining. Leaves alternate or opposite, entire or divided, the nerves or primary veins parallel or digitate, the intervening veinlets reticulate. Flowers small, usually of a yellowish green, in axillary simple or paniculate spikes or racemes, the male inflorescence usually more branched than the female.

The Order comprises but few genera, dispersed over the tropical and temperate regions of the globe. The only Australian genus certainly belonging to it has the wide range of the Order. The second, imperfectly known and therefore doubtful genus subjoined, is endemic.

1. DIOSCOREA, Linn.

(Helmia, *Kunth.*)

Flowers diœcious. Stamens in the Australian species 6. Capsule 3-angled or 3-lobed, opening longitudinally at the angles, often leaving their nervelike margins free. Seeds winged.—Underground rhizomes often tuberous and known by the name of *Yams*. Stems twining.

A large tropical and subtropical genus, especially numerous in South America. Of the three Australian species, one is common in tropical Asia, the two others, as far as hitherto known, are endemic. The tubers of all three said to be eaten by the natives or colonists as native yams.

Perianth-segments broad. Capsule broader than long. Seeds winged all round.
- Leaves frequently opposite, ovate-cordate or triangular-hastate with a broad open basal sinus . . . . . 1. *D. transversa.*
- Leaves all alternate, linear or linear-lanceolate, or the lower smaller ones triangular-hastate . . . . . 2. *D. hastifolia.*

Perianth-segments narrow. Capsule longer than broad. Seeds winged at one end only. Leaves alternate, ovate-cordate . . 3. *D. sativa.*

D. lucida, R. Br. Prod. 295, described from a specimen without flowers or fruit, gathered on the Endeavour river by Banks and Solander, is evidently a species of *Roxburghia*, and probably *R. javanica*, Miq.

1. **D. transversa,** *R. Br. Prod.* 295. A slender glabrous twiner with a tuberous rhizome. Leaves opposite or alternate, triangular-hastate or ovate-cordate, the basal lobes always very spreading with a broad obtuse sinus, more or less acuminate, 5- or 7-nerved, usually 3 to 4 in. long and scarcely half as broad, but on barren shoots sometimes broader than long. Male flowers sessile and distant along the rhachis of interrupted slender spikes of 1½ to 2 in., the spikes clustered along the branches of axillary panicles. Perianth-segments orbicular, above 1 line diameter in some specimens, not half so large in others, but perhaps not fully developed, all much imbricate, the 3 inner ones rather smaller. Anthers on short filaments inserted on a disk, with a small rudiment of an ovary in the centre. Female racemes simple, 2 to 4 in. long, the flowers distant. Ovary oblong-linear. Perianth of the males but smaller. Styles short, distinct, the stigmas shortly 2-cleft. Capsule

shortly stipitate, the axis about ¾ in. long, the protruding angles or lobes about ½ in. long.

N. Australia. Escape Cliffs, *Hulls.*

Queensland. Sent by numerous collectors as very common from Brisbane river, Moreton bay, *A. Cunningham*, and others, to Rockingham bay, *Dallachy.*

N. S. Wales. Hunter's and Paterson's rivers, *R. Brown;* Hastings and Clarence rivers, *Beckler*, and others; Richmond river, *C. Moore*, and others; New England, *C. Stuart.*

D. punctata, R. Br. Prod. 294, is referred by F. Mueller without hesitation to *D. transversa.* In Brown's herbarium there are two specimens in the same sheet, both in flower only, without the precise station for either. In both the leaves are similar to those of some specimens of *D. transversa*, and one has the same obtuse broad perianth-lobes, but in the other the perianths are rather those of *D. sativa.* The *D. transversa* itself is evidently nearly allied to *D. japonica*, Thunb., as described and figured by Decaisne in the Revue Horticole, 1855, p. 71, and confirmed by Japanese specimens in the Kew herbarium. The Australian plant has the leaves rather different, the basal sinus always very broad and open, and often the base quite straight and truncate. The fruit also appears to be rather larger, but that may be variable. The *D. batatas* Decsne., is certainly quite distinct from it, but probably the same as the common Indian *D. glabra*, Roxb.

2. **D. hastifolia,** *Endl. in Pl. Preiss.* ii. 33. A smaller species than *D. transversa*, with slender almost filiform twining stems. Lower leaves triangular-hastate, 3- or 5-nerved, under 1 in. long and sometimes as broad at the base as long, the upper ones all linear-lanceolate or linear, entire, ¾ to 1½ in. long. Male spikes ½ to 1½ in. long, solitary in the axils of floral leaves, the upper ones appearing paniculate owing to the reduction of the subtending leaves to small bracts. Perianth-segments obtuse, nearly as large as in *D. transversa* but not so broad. Stamens similarly inserted in the centre of the flower round a minute rudimentary pistil. Female racemes very short, bearing usually only 2 or 3 flowers. Perianth small, with orbicular segments. Fruit and seeds of *D. transversa* or rather smaller, on a shorter stipes.—Kunth, Enum. v. 379.

W. Australia. Swan river, *Drummond, 1st coll. n.* 821, *Preiss, n.* 1954; Champion bay and Murchison river, *Oldfield;* Pinjarrah, *J. S. Pries.*

3. **D. sativa,** *Linn. Spec. Pl.* 1463, *Hort. Cliff.* t. 28, *but not of Kunth, Enum.* Stems from a tuberous rhizome elongated and twining, often bearing green globular bulbs in the axils of the leaves. Leaves alternate, broadly ovate, deeply cordate, usually 9-nerved, or when 7-nerved the extreme lateral nerves forked, very variable in size, in the Australian specimens usually 3 to 6 in. long and nearly as broad. Male spikes slender, 1 to 2 in. long when fully out, usually numerous, clustered along the branches of long narrow axillary panicles. Flowers very small, the perianth-segments very narrow, those of each series almost valvate in the bud, the inner ones linear. Stamens 6, the anthers almost sessile in the centre of the flower round a rudimentary pistil. Female flowers in longer slender single spikes. Capsule oblong, the axis about ¾ in. long. Seeds flattened, winged at the lower end only, assuming quite the form of a samara, the wing at least twice as long as the nucleus.—*D. bulbifera*, R. Br. Brod. 294; Wight, Ic.

t. 878 and of most modern authors but not of Linn.—*Helmia bulbifera* Kunth, Enum, v. 435.

N. Australia. Islands of the Gulf of Carpentaria, *R. Brown;* Goulburn island, *A. Cunningham;* Melville island, *Fraser;* Port Darwin, *Schultz, n.* 173; Port Essington, *Armstrong.*

Queensland. Rockingham bay, *Dallachy.*

The species is widely spread over East India and the Archipelago. I have already (Fl. Hongk. 368) expressed my belief that modern authors have transposed the Linnean names of the two species, *D. sativa* and *D. bulbifera*, both of which are apt to bear bulbs in the axils of the leaves.

2.? PETERMANNIA, F. Muell.

Stamens 6; filaments capillary, with linear anthers. Ovary 3-celled with 4 or 5 ovules in each cell. Style filiform, undivided. Fruit a 1-celled berry, with several seeds.—Stems twining. Flowers in leaf-opposed panicles.

The genus is limited to the single imperfectly known species endemic in Australia.

1. **P. cirrosa,** *F. Muell. Fragm.* ii. 93. A glabrous climber with the aspect rather of the *Smilax* tribe than of the *Dioscoreæ*, the branches slightly angular and bearing a few minute prickles. Leaves alternate, rigid, oblong lanceolate or ovate-lanceolate, acuminate, 2 to 3 in. long, $\frac{3}{4}$ to 1 in. broad, tapering into a short petiole slightly twisted at the base as in *Smilax*, the longitudinal veins numerous, but mostly starting from the midrib below the middle and not reaching the base of the leaf, with reticulate veinlets between the veins. Panicles narrow and loose, leaf-opposed and rather longer than the leaves, the branchlets short and apparently few-flowered, but the specimens only retain 2 or 3 fruits the flowers having fallen away, and in the upper part the inflorescences are replaced by simple tendrils. Berries about 2 lines diameter, crowned by the scar of the fallen flower and containing several unripe seeds. There are no loose flowers with the specimen, but according to F. Mueller "Perianth-segments about $2\frac{1}{2}$ lines long, only seen as well as the stamens in the female plant. Filaments glabrous, $1\frac{1}{2}$ lines long, deciduous; anthers 1 line long. Styles 2 lines."

N. S. Wales. Cloud's creek, Clarence river, *Beckler.*—Of this I have only seen two very imperfect specimens in Herb. F. Mueller, one of which retains 2 berries in their place, and a few loose fragments of fruits. The "perfect stamens in female flowers," *i.e.*, hermaphrodite flowers, and several ovules in each cell of the ovary described by F. Mueller, are at variance with the ordinal character, and the venation of the leaves is different from that of any of the dictyogenous Monocotyledons known to me.

INDEX OF GENERA AND SPECIES.

The Synonyms and Species incidentally mentioned are printed in Italics.

Page

Acalypha 131
capillipes, *F. Muell.* 133
Cunninghamii, Mu. Arg. 132
eremorum, *Mu. Arg.* 132
nemorum, *F. Muell.* 132
Acianthus 369
bifolius, Br. . . . 390
Brunonis, F. Muell. 370
caudatus, *Br.* . . 369
exsertus, *Br.* . . . 370
fornicatus, *Br.* . . 370
viridis, *Hook. f.* . . 371
Actephila 88
grandifolia, *Baill.* . 89
latifolia, *Benth.* . . 89
Mooreana, *Baill.* . . 89
petiolaris, *Benth.* . 89
sessilifolia, *Benth.* . 90
Actinostrobus . . . 239
acuminatus, *Parlat.* 240
pyramidalis, *Miq.* . 239
Adriana 133
acerifolia, *Hook.* . . 134
acerifolia, var., Mu. Arg. 135
Billardieri, Baill. . 135
Dampieri, F. Muell. 133
Gaudichaudi, Baill. 135
glabrata, Gaudich. . 134
heterophylla, Hook. 134
Hookeri, *Muell. Arg.* 135
Klotzschii, *Mu. Arg.* 135
quadripartita, *Gaud.* 135
tomentosa, *Gaudich.* 134
Agathis, Salisb. . . 244
Alchornea 136
ilicifolia, *Muell. Arg.* 136
Thozetiana, *Baill.* . 137
Aleurites 128
moluccana, *Willd.* . 128
triloba, Forst. . . 129
Alpinia 264

Page

arctiflora, *F. Muell.* 266
cœrulea, *Benth.* . . 265
racemigera, *F. Muell.* 265
Amanoa
Cunninghamii, Baill. 122
Dallachyana, Baill. 123
faginea, Baill. . . 121
Leichhardtii, Baill. 121
ovata, Baill. . . . 119
tomentosa, Baill. . 120
Amaryllideæ . . . 415
Amaryllis
australasica, Ker. . 455
australis, Spr. . . 455
Amomum 263
Dallachyi, *F. Muell.* 263
Amperea 81
conferta, *Benth.* . . 83
cuneiformis, F. Mu. 84
ericoides, *A. Juss.* . 83
micrantha, *Benth.* . 83
protensa, *Nees* . . 82
rosmarinifolia, Kl. 83
spartioides, *Brongn.* 84
subnuda, Nees . . 82
volubilis, *F. Muell.* 82
Andrachne 87
Decaisnei, *Benth.* . 88
fruticosa, Dene. . . 88
Androstemma
junceum, Lindl. . . 441
Anigozanthos . . . 441
bicolor, *Endl.* . . 446
coccinea, Paxt. . . 444
flavida, *Red.* . . . 443
fuliginosa, Hook. . 447
grandiflora, Salisb. . 444
humilis, *Lindl.* . . 444
Manglesii, *Don* . . 445
Manglesii, Maund. . 444
minima, Lehm. . . 444
Preissii, *Endl.* . . 444
pulcherrima, *Hook.* . 443

Page

rufa, *Labill.* . . . 442
tyrianthina, Hook. . 443
viridis, *Endl.* . . 445
Anisonema
eglandulosum, Dene. 102
Anisophyllum, Haw. . 44
Anthobolus 226
filifolius, *Br.* . . . 226
foveolatus, *F. Muell.* 226
leptomerioides, *F. M.* 227
triqueter, *Br.* . . 226
Antiaris 179
macrophylla, Br. . 179
Antidesma 84
Bunius, *Spreng.* . . 86
Dallachyanum, *Baill.* 85
erostre, *F. Muell.* . 87
Ghæsembilla, *Gærtn.* 85
paniculatum, Roxb. 85
parvifolium, *F. Mu.* 86
Schultzii, *Benth.* . 86
sinuatum, *Benth.* . 87
Aphananthe 159
philippinensis, *Plan.* 160
Apostasia 395
stylidioides, *Reichb.* 396
Araucaria 242
Bidwilli, *Hook.* . . 243
Cunninghamii, *Ait.* . 243
Arethusa
catenata, Sm. . . 386
Aristolochia 207
Baueri, Duch. . . 209
deltantha, *F. Muell.* 207
indica, *Linn.* . . 209
prævenosa, *F. Muell.* 208
pubera, *Br.* . . . 208
strictiflora, Duch. . 208
Thozetii, *F. Muell.* . 208
Aristolochiaceæ . . 206
Arthrochilus
irritabilis, F. Muell. 368
Arthrotaxis 241

Page

alpina, Van Houtte . 242
cupressoides, *Don* . 242
Doniana, Park. . 242
imbricata. Maule . 242
laxifolia, *Hook.* . . 242
selaginoides, *Don* . 242
tetragona, Hook. . 241
Australina 188
Muelleri, *Wedd.* . 189
Novæ-Zelandiæ, Hook. f. . . . 189
pusilla, *Gaudich.* . 189
tasmanica, Hook. f. 189

Balanophora. . . . 232
fungosa, *Forst.* . . 232
BALANOPHOREÆ. . . 231
Baloghia 148
lucida, *Endl.* . . . 148
Pancheri, *Baill.* . 149
Bertya 74
Cunninghamii, *Plan.* 75
gummifera, *Planch.* 75
gummifera, *var.*, Muell. Arg. . . 71
Mitchelli, *Mu. Arg.* 76
oblongifolia, Mu. Arg. 78
oleæfolia, *Planch.* . 76
pedicellata, *F. Muell.* 77
pinifolia, *Planch.* . 75
pomaderroides, *F. M.* 77
psilocladus, Mu. Arg. 71
rosmarinifolia, *Plan.* 76
rotundifolia, *F. Mu.* 77
tasmanica, Mu. Arg. 76
Beyeria 63
Backhousii, Hook. f. 65
brevifolia, *Baill.* . 67
cinerea, *Baill.* . . 66
cyanescens, *Benth.* . 66
cygnorum, *Baill.* . 66
Drummondii, *Mu. Ar.* 68
lasiocarpa, *F. Muell.* 65
latifolia, *Baill.* . . 66
ledifolia, Sond. . . 65
lepidopetala, *F. Mu.* 67
Leschenaultii, Baill. 65
oblongifolia, Hook. f. 64
opaca, *F. Muell.* . 65
similis, *Baill.* . . 67
tristigma, *F. Muell.* 68
uncinata, *F. Muell.* . 65
viscosa, *Miq.* . . . 64
Beyeriopsis brevifolia, Mu. Arg. 68
cinerea, Muell. Arg. 66
cyanescens, Mu. Arg. 67
cygnorum, Mu. Arg. 66

Page

latifolia, Muell. Arg. 66
lepidopetala, Mu. Ar. 67
similis, Muell. Arg. 67
Blancoa 441
canescens, *Lindl.* . 441
Bletia
Paulinæ, F. Muell. 304
Tankervillæ, Br. . 305
Blyxa. 258
octandra, Planch. . 258
Roxburghii, *Rich.* . 258
Boehmeria 184
calophleba, *F. Muell.* 184
Bolbophyllum . . . 286
aurantiacum, *F. Mu.* 288
Elisæ, *F. Muell.* . 289
exiguum, *F. Muell.* . 288
lichenastrum, *F. Mu.* 287
nematopodium, *F. M.* 287
Schillerianum, Reichb. f. . . . 288
Shepherdi, *F. Muell.* 288
Bowenia 254
spectabilis, *Hook.* . 254
Bradleia, Gærtn. . . 96
Breynia 113
cernua, *Muell. Arg.* 113
cinerascens, Baill. . 114
Muelleriana, Baill. . 114
oblongifolia, *M. Arg.* 114
rhynchocarpa, *Benth.* 114
stipitata, *Mu. Arg.* . 114
Briedelia 119
exaltata, *F. Muell.* . 119
faginea, *F. Muell.* . 120
Leichhardtii, Baill. 121
ovata, *Dene.* . . . 120
ovata, *var.*, Mu. Arg. 119
tomentosa, *Blume.* . 120
Burmannia 397
cœlestis, Don . . . 398
distachya, Br. . . 397
disticha, *Linn.* . . 397
juncea, *Soland.* . . 397
pusilla, Thw. . . 398
BURMANNIACEÆ . . 396
Burnettia 375
cuneata, *Lindl.* . . 375

Caladenia, ... 376
alata, Br. . . . 386
alba, Br. 387
angustata, Hook. f. 386
angustata, Lindl. . 387
aphylla, *Benth.* . . 387
Barbarossæ, *Reichb.* 383
barbata, Lindl. . . 388
Behrii, Schlecht. . 382

Page

Brunonis, Reichb. . 393
cærulea, *Br.* . . . 388
Cairnsiana, *F. Muell.* 380
carnea, *Br.* . . . 386
clavigera, *Cunn.* . . 382
congesta, *Br.* . . . 387
cuneata, Reichb. . 375
deformis, *Br.* . . 388
denticulata, Lindl. . 381
dilatata, Br. . . . 382
diphylla, Reichb. . 390
discoidea, *Lindl.* . 380
Drummondii, *Benth.* 383
elliptica, Reichb. . 375
elongata, Lindl. . . 385
emarginata, Reichb. 393
filamentosa, *Br.* . . 381
filamentosa, Lindl. . 382
filifera, Lindl. . . 381
fimbriata, *Reichb.* . 379
flava, *Br.* 384
gemmata, *Lindl.* . 389
gracilis, Br. . . . 387
Gunnii, Reichb. . . 391
hirta, *Lindl.* . . . 383
ixioides, *Lindl.* . . 389
latifolia, *Br.* . . . 384
longicauda, Lindl. . 382
macrophylla, Br. . 379
major, Reichb. . . 392
marginata, Lindl. . 385
Menziesii, Br. . . 379
minor, Reichb. . . 392
mollis, Endl. . . . 383
mollis, Lindl. . . 385
multiclavia, *Reichb.* 380
nana, Endl. . . . 385
nigricans, Reichb. . 374
ochreata, Lindl. . . 385
pallida, Lindl. . . 382
Patersoni. *Br.* . . 381
pellita, Endl. . . . 389
Preissii, Endl. . . 385
pulcherrima, F. Mu. 381
reniformis, Reichb. . 376
reptans, *Lindl.* . . 385
Roei, *Benth.* . . . 383
saccharata, *Reich.* . 388
sericea, *Lindl.* . . 389
serrata, *Reichb.* . . 386
suaveolens, *Reichb.* . 385
sulphurea, Cunn. . 386
tentaculata, Schlecht. 382
testacea, *Br.* . . . 387
unguiculata, Lindl. 388
Calanthe 305
veratrifolia, *Br.* . . 305
Caleana 365

	Page
major, *Br.*	365
minor, *Br.*	366
nigrita, *Lindl.*	366
Caletia	
divaricatisima, Mu. Arg.	60
hexandra, Mu. Arg.	57
linearis, Muell. Arg.	60
micranthcoides, Bail.	57
orientalis, Baill.	60
ovalifolia, Mu. Arg.	59
Caleya	
major, Endl.	366
Callitris	
actinostrobus, F. M.	240
arenosa, Sweet.	238
calcarata, Br.	238
columellaris, F. Mu.	237
cupressiformis, Vent.	238
glauca, Br.	237
Gunnii, Hook. f.	239
oblonga, Rich.	239
Parlatorei, F. Muell.	235
Preissii, Miq.	237
propinqua, Br.	237
rhomboidea, Br.	238
robusta, Br.	237
tuberculata, Br.	237
verrucosa, Br.	237
Calochilus	314
australianus, F. Mu.	315
campestris, Br.	315
herbaceus, Lindl.	315
paludosus, *Br.*	316
Robertsoni, *Benth.*	315
Calostemma	456
album, *Br.*	458
candidum, Lindl.	457
carneum, Lindl.	457
luteum, *Sims.*	457
purpureum, *Br.*	457
Calycopeplus	52
ephedroides, *Planch.*	53
marginatus, *Benth.*	53
paucifolius, Baill.	53
Calyptrostegia	
angustifolia, C. A. Mey.	13
argentea, C. A. Mey.	25
brevifolia, C. A. Mey.	12
cernua, C. A. Mey.	17
elaytioides, Walp.	29
cornucopiæ, Endl.	6
curviflora, C. A. Mey.	31
Drummondii, Turcz.	15
flava, Endl.	29
glauca, C. A. Mey.	16
graciliflora, Endl.	12
gracilis, Endl.	31
hypericina, C. A. Mey.	19
intermedia, C. A. Mey.	16
lanata, Endl.	10
Lehmanniana, Endl.	9
ligustrina, C. A. Mey.	18
linifolia, C. A. Mey.	18
linoides, Endl.	18
longiflora, Endl.	34
macrocephala, Walp.	15
Menkeana, Endl.	15
microcephala, Endl.	27
nana, Endl.	21
nervosa, Walp.	13
phylicoides, Walp.	33
Schlechtendaldiana, Walp.	16
spathulata, C. A. Mey.	17
spicata, Endl.	23
suaveolens, Endl.	15
sylvestris, C. A. Mey.	12
tinctoria, Endl.	15
trichostachya, Walp.	24
villifera, Walp.	21
villosa, Turcz.	34
Calyptrostigma	
ledifolium, Kl.	68
oblongifolium, Kl.	64
viscosum, Kl.	64
Campylonema	
lineare, Schultz	415
Campynema	414
lineare, *Labill.*	415
pygmæum, *F. Muell.*	415
Carumbium	149
pallidum, Muell. Arg.	150
platyneuron, Muell. Arg.	150
populifolium, *Reinw.*	150
populneum, Mu. Arg.	150
Sieberi, Muell. Arg.	150
stillingiæfolium, *Baill.*	150
Casuarina	194
acuaria, *F. Muell.*	202
Baxteriana, Miq.	199
bicuspidata, *Benth.*	202
cristata, Miq.	195
Cunninghamiana, *Miq.*	198
Decaisneana, *F. Mu.*	201
decussata, *Benth.*	200
distyla, *Vent.*	198
Drummondiana, *Miq.*	201
dumosa, Cunn.	199
echinata, Br.	202
equisetifolia, *Forst.*	197
excelsa, Dehnh.	197
Fraseriana, *Miq.*	199
glauca, *Sieb.*	196
Gunnii, Hook. f.	195
Huegeliana, *Miq.*	196
humilis, *Ott. et Dietr.*	200
incana, Cunn.	197
Lehmanniana, Miq.	200
leptoclada, Miq.	197
macrocarpa, Cunn.	195
microstachya, *Miq.*	201
mœsta, F. Muell.	198
Muelleriana, Miq.	198
nana, *Sieb.*	199
nana, Cunn.	200
obesa, Miq.	197
oxyclada, Miq.	202
paludosa, Sieb.	199
pauper, F. Muell.	196
Preissiana, Miq.	200
pumila, Ott. et Dietr.	199
quadrivalvis, Labill.	195
ramuliflora, Ott. et Dietr.	200
rigida, Miq.	198
selaginoides, Miq.	200
sparsa, Tausch.	197
stricta, *Ait.*	195
stricta, Miq.	198
suberosa, *Ott. et Dietr.*	197
tenuissima, Sieb.	200
tephrosperma, Hort.	200
thuyoides, *Miq.*	202
tortuosa, Hort.	197
torulosa, *Ait.*	200
torulosa, Miq.	196, 199
trichodon, *Miq.*	196
truncata, Willd.	197
CASUARINEÆ	192
Catakidozamia	
Hopei, Hill	254
Macleayi, Hill	254
Celtis	155
amboinensis, Willd.	159
aspera, Brongn.	158
ingens, F. Muell.	156
opaca, Moore	157
orientalis, Linn.	159
paniculata, *Planch.*	156
philippinensis, *Blanco*	156
strychnoides, Planch.	156
virgata, Roxb.	158
Cephalotropis	
javanica, Bl.	181
Chiloglottis	390
diphylla, *Br.*	390
Gunnii, *Lindl.*	391
Choretrum	217
Candollei, *F. Muell.*	219
chrysanthum, F. Mu.	218
glomeratum, *Br.*	218

Page
lateriflorum, *Br.* . 219
lateriflorum, A. DC. 219
oxycladum, F. Mu. . 218
pauciflorum, A. DC. 219
Preissianum, Miq. . 221
spicatum, *F. Muell.* 218
spinosum, Lehm. . 221
Chorizotheca
micrantheoides, Mu. Arg. 61
Chrysostemon
virgatus, Kl. . . . 61
Cirrhopetalum
Elisæ, F. Muell. . . 289
Cladodes
ilicifolia, Baill. . . 136
Thozetiana, Baill. . 137
Claoxylon 129
angustifolium, *Muell. Arg.* 129
australe, *Baill.* . . 130
Hillii, *Benth.* . . 131
tenerifolium, *F. Mu.* 130
Cleisostoma 295
Beckleri, *F. Muell.* . 296
Macphersoni, *F. Mu.* 297
tridentatum, *Lindl.* 296
Cleistanthus 121
apodus, *Benth.* . . 122
Cunninghamii, *Muell. Arg.* 122
Dallachyanus, *Baill.* 122
semiopacus, *F. Muell.* 123
Codiæum 147
chrysostictum: Sprng. 147
lucidum, Muell. Arg. 148
moluccanum, Dene. 147
obovatum, Zoll. . . 147
Pancheri, Muell. Arg. 149
pictum, Hook. . . 147
variegatum, *Blume* . 147
Colubrina
ilicifolia, J. Sm. . 136
Coniferæ 232
Conostylis 428
aculeata, *Br.* . . . 438
æmula, Lindl. . . 433
albicans, Cunn. . . 436
androstemma, *F. Mu.* 440
assimilis, Endl. . . 433
aurea, *Lindl.* . . 432
bracteata, *Endl.* . . 437
bracteata, Lindl. . 437
breviscapa, *Br.* . . 430
bromelioides, *Endl.* . 438
candicans, *Endl.* . . 436
canescens, F. Muell. 441
caricina, *Lindl.* . . 440
Page
cymosa, *F. Muell.* . 439
dealbata, *Lindl.* . 436
discolor, Endl. . . 433
Drummondii, *Benth.* 433
ensifolia, Endl. . . 440
festucana, Endl. . . 437
filifolia, *F. Muell.* . 438
gladiata, *Benth.* . . 434
graminea, Endl. . . 440
involucrata, *Endl.* . 434
juncea, *Endl.* . . 434
laxiflora, *Benth.* . . 439
longifolia, Endl. . 440
melanopogon, *Endl.* 432
minima, Endl. . . 433
misera, Endl. . . 440
occulta, Endl. . . 440
petrophiloides, *F. Mu.* 431
Preissii, *Endl.* . . 437
prolifera, *Benth.* . . 436
propinqua, Endl. . 436
psyllium, *Endl.* . . 433
pusilla, Endl. . . 433
racemosa, *Benth.* . 436
seorsiflora, *F. Muell.* 435
serrulata, *Br.* . . 439
setigera, *Br.* . . . 432
setosa, *Lindl.* . . 431
spathacea, Endl. . . 440
spinuligera, *F. Mu.* 438
stylidioides, *F. Muell.* 435
sulphurea, Endl. . 432
teretiuscula, *F. Mu.* 435
vaginata, *Endl.* . . 431
villosa, *Benth.* . . 433
Corybas
aconitiflorus, Salisb. 352
fimbriatus, Reichb. . 351
pruinosus, Reichb. . 351
unguiculatus, Reichb. 350
Corymbis 311
veratrifolia, *Reichb.* 311
Corymborchis
veratrifolia, Bl. . . 311
Corysanthes 350
bialcarata, *Br.* . . 351
diemenica, Lindl. . 351
fimbriata, *Br.* . . 351
pruinosa, Cunn. . . 351
unguiculata, *Br.* . 350
Costus 266
Potieræ, *F. Muell.* . 266
pungens, Teysm. et Binnend. . . . 267
Covellia
glomerata, Miq. . . 178
oppositifolia, Gasp. 177
Crinum 453
Page
angustifolium, Br. . 454
arenarium, Herb. . 454
asiaticum, *Linn.* . 454
australasicum, Herb. 454
australe, Herb. . . 455
brachyandrum, Herb. 454
confertum, Herb. . 454
flaccidum, *Herb.* . 454
pedunculatum, *Br.* . 455
taitense, Red. . . 455
uniflorum, *F. Muell.* 454
venosum, *Br.* . . . 453
Croton 123
acronychioides, *F. Mu.* 127
arnhemicus, *Mu. Arg.* 127
insularis, *Baill.* . . 124
marginatus, Cunn. . 73
mollissimus, Geisel. 140
opponens, *F. Muell.* 125
paniculatus, Lam. . 140
phebalioides, *F. Mu.* 125
phebalioides, Cunn. 125
philippinensis, Lam. 141
quadripartitus, Labil. 135
ricinoides, Pers. . 140
rosmarinifolius, Cunn. . . . 73, 76
Schultzii, *Benth.* . 124
stigmatosus, F. Muell. 125
tomentellus, *F. Mu.* 126
triacros, *F. Muell.* . 127
Verreauxii, *Baill.* . 126
viscosus, Labill. . . 64
Cryptostylis 332
erecta, *Br.* . . . 334
leptochila, *F. Muell.* 334
longifolia, *Br.* . . 333
ovata, *Br.* . . . 334
subulata, Reichb. . 333
Cudrania 178
javanensis, *Trec.* . . 179
Cunninghamia
cupressoides, Zucc. . 242
selaginoides, Zucc. . 242
Cupressus
australis, Desf. . . 238
Cupuliferæ . . . 209
Curculigo 447
ensifolia, *Br.* . . 448
orchioides, Miq. . . 448
recurvata, *Ait.* . . 448
stans, Labill . . . 448
Curcuma 262
australasica, *Hook. f.* 263
Cycadeæ 248
Cycas 249
angulata, Br. . . 249
gracilis, Miq. . . 249

	Page
media, *Br.*	249
Riedleyi, Gaudich.	252
Cymbidium	302
albuciflorum, *F. Mu.*	303
canaliculatum, *Br.*	302
pictum, Br.	299
reflexum, Br.	273
suave, *Br.*	303
Cynomorium	
balanophora, Willd.	232
Cyrtostylis	376
Huegelii, Endl.	376
reniformis, *Br.*	376
Dacrydium	244
Franklinii, *Hook. f.*	245
Huonense, Cunn.	245
tetragonum, Parlat	241
Damasonium	
cygnorum, Planch.	257
indicum, Willd.	257
ovalifolium, Br.	257
Dammara	244
robusta, *Moore*	244
Daphne	
indica, Linn.	37
Daphnobryon.	
tasmanicum, Meissn.	36
Dendrobium	275
æmulum *Br.*	280
agrostophyllum, *F. Muell.*	281
aurantiacum, F. Mu.	288
Beckleri, F. Muell	286
bigibbum, *Lindl.*	277
Bowmanii, *Benth.*	286
brisbanense, Reichb.	281
calamiforme, Lodd.	285
canaliculatum, *Br.*	282
cassythoides, Cunn.	307
complanatum, Cunn.	277
cucumerinum, *Lindl.*	283
dicuphum, *F. Muell.*	277
discolor, Lindl.	279
elongatum, Cunn.	281
exiguum, F. Muell.	289
Fairfaxii, F. Muell.	285
Fellowsii, F. Muell.	277
gracilicaule, *F. Mu.*	281
Hillii, Hook	279
Hillii, F. Muell.	295
hispidum, *A. Rich.*	283
Johannis, *Reichb.*	279
Kingianum, *Bidw.*	280
linguiforme, *Sw.*	284
Milligani, F. Muell.	286
minutissimum, F. M.	277
monophyllum, *F. M.*	282
Moorei, *F. Muell.*	281
Mortii, *F. Muell.*	286
puigoniforme, *Cunn.*	284
punctatum, Sm.	301
pungentifolium, F.M.	284
rigidum, *Br.*	284
schœninum, Lindl.	286
Shepherdi, F. Muell.	288
Smilliæ, *F. Muell.*	282
speciosum, *Sm.*	279
striolatum, *Reichb.*	285
Sumneri, *F. Muell.*	278
Tattonianum, Batem.	282
teretifolium, *Br.*	285
teretifolium, Lindl.	286
tetragonum, *Cunn.*	279
tortile, Cunn.	283
undulatum, *Br.*	278
Dioscorea	460
bulbifera, Br.	461
hastifolia, *Endl.*	461
lucida, Br.	460
punctata, Br.	461
sativa, *Linn.*	461
transversa, *Br.*	460
DIOSCOREÆ	459
Diplarrhena	399
latifolia, *Benth.*	400
Moræa, *Labill.*	400
Dipodium	300
ensifolium, *F. Muell.*	301
punctatum, *Br.*	301
venosum, F. Muell.	300
Diselma	240
Archeri, *Hook. f.*	240
Disperis	
alata, Labill.	359
Dissiliaria	90
baloghioides, *F. Mu.*	90
Muelleri, *Baill.*	91
tricornis, *Benth.*	91
Diuris	324
abbreviata, *F. Mu.*	329
æqualis, F. Muell.	328
alba, *Br.*	325
aurea, *Sm.*	327
Behrii, Schlecht.	328
carinata, Lindl.	330
corymbosa, Lindl.	331
curvifolia, Lindl.	328
Drummondii, Lindl.	330
elongata, Sw.	326
emarginata, *Br.*	330
filifolia, Lindl.	329
lanceolata, Lindl.	328
laxiflora, Lindl.	330
lilacina, F. Muell.	326
longifolia, *Br.*	331
maculata, *Sm.*	327
Novæ-Zelandiæ, Rich.	332
oculata, F. Mu. 327,	331
pallens, *Benth.*	329
palustris, *Lindl.*	327
pardina, Lindl.	328
pauciflora, *Br.*	331
pedunculata, *Br.*	328
porrifolia, Lindl.	331
punctata, *Sm.*	326
setacea, *Br.*	329
spathulata, Sw.	327
sulphurea, *Br.*	330
Doryanthes	452
excelsa, *Corr.*	452
Palmeri, *Hill*	452
Drakæa	367
ciliata, *Reichb.*	367
elastica, *Lindl.*	368
irritabilis, *Reichb.*	368
Drapetes	35
tasmanica, *Hook. f.*	36
Drymispermum	
Blumei, Dene.	38
clerodendron, F. M.	39
laurifolium, Dene.	38
Neumanni, F. Mu.	38
Dumartroya	
fagifolia, Gaud.	181
Echinocroton	
claoxyloides, F. Mu.	141
Echinosphæra	
rosmarinoides, Sieb.	70
Echinus	
claoxyloides, Baill	141
Dallachyanus, Baill.	145
mollissimus, Baill.	140
nesophilus, Baill.	143
philippinensis, Baill.	141
Elachocroton	
asperococcus, F. Mu.	152
ELÆAGNACEÆ	39
Elæagnus	39
latifolia, *Linn.*	39
Elatostemma	185
reticulatum, *Wedd.*	185
sessile, Forst.	184
stipitatum, *Wedd.*	184
Elettaria	264
Scottiana, *F. Muell.*	264
Encephalartos	
Denisonii, F. Mu.	253
Fraseri, Miq.	252
Macdonelli, F. Mu.	253
Miquelii, F. Muell.	253
Oldfieldii, Miq.	252

Page

Paulo-Gulielmi, F. Muell. 251
Preissii, F. Muell. . 252
spiralis, Lehm. . . 251
Ephedra arborea, F. Muell. . 54
Epiblema 324
grandiflorum, *Br.* . 324
Epipactis cucullata, Labill. . 372
reflexa, Labill. . . 390
Epipogum 308
Guilfoylei, F. Muell. 308
nutans, *Lindl.* . . 308
Eria limenophylax, Reichb. . . . 290
Eriochilus 371
autumnalis, *Br.* . . 372
cucullatus, Reichb. . 372
dilatatus, *Lindl.* . 373
latifolius, Lindl. . . 373
Lindleyi, Endl. . . 372
multiflorus, *Lindl.* . 373
scaber, *Lindl.* . . 372
tenuis, *Lindl.* . . 372
Erythrorchis aphylla, F. Muell. . 307
foliata, F. Muell. . 308
Eucarya Murrayana, Mitch. 217
Eulophia 299
Fitzalani, *F. Muell.* 300
venosa, *Reichb. f.* . 300
Euphorbia 44
alsinæflora, *Baill.* . 49
Armstrongii, *Boiss.* . 48
atoto, *Forst.* . . . 46
australis, *Boiss.* . . 48
Brownii, Baill. . 46
chamæsyce, Baill. . 49
Dallachyana, Baill. . 49
deserticola, F. Mu. . 52
divaricata, A. Cunn. 50
Drummondii, *Boiss.* . 49
eremophila, *A. Cunn.* 52
erythrantha, F. Mu. 48
Ferdinandi, Baill. . 49
filipes, *Benth.* . . 51
levis, Poir. . . . 46
Macgillivrayi, *Boiss.* 50
micradenia, *Boiss.* . 50
Mitchelliana, *Boiss.* 47
Muelleri, *Boiss.* . 48
myrtoides, *Boiss.* . 50
oraria, F. Muell. . 46
paucifolia, Kl. . . 53
peplus, *Linn.* . . 45

Page

pilulifera, *Linn.* . . 51
ramosissima, Boiss. . 47
schizolepis, *F. Mu.* . 47
Schultzii, *Benth.* . 47
serrulata, *Reinw.* . 51
sharkoensis, Baill. . 50
Sparmanni, *Boiss.* . 46
vaccaria, Baill. . 48
Wheeleri, *Baill.* . . 49
Euphordiaceæ . . . 41
Eurycles 455
amboinensis, *Loud.* . 456
australasica, Loud. . 456
australis, Schult. . 456
Cunninghamii, *Ait.* . 456
sylvestris, Salisb. . 456
Excœcaria 152
agallocha, *Linn.* . 152
chamelœa, Baill. . 152
Dallachyana, *Baill.* . 153
parvifolia, *Mu. Arg.* 153
Exocarpus 227
aphylla, *Br.* . . . 230
cupressiformis, *Labil.* 229
dasystachys, Schlecht. 230
glandulacea, Miq. . 229
homaloclada, *Moore and Muell.* . . 230
humifusa, *Br.* . . 231
humifusa, Hook. f. 231
latifolia, *Br.* . . 228
leptomerioides, F.M. 230
luzoniensis, Presl. . 228
miniata, Zipp. . . 228
nana, *Hook. f.* . . 231
odorata, *A. DC.* . . 228
ovata, Schnitzl. . . 228
pendula, F. Muell. . 229
spartea, *Br.* . . . 229
spicata, DC. . . . 229
stricta, *Br.* . . . 230

Fagus 209
Carronii, C. Moore 211
Cunninghamii, *Hook.* 210
Gunnii, *Hook. f.* . 210
Moorei, *F. Muell.* . 211
Fatoua, ... 182
pilosa, *Gaudich.* . 182
Ficus 160
aculeata, *Cunn.* . 175
aspera, *Forst.* . . 174
australis, Willd. . 168
Beckleri, Miq. . . 175
benjaminea, *Linn.* . 167
brachypoda, Miq. . 167
casearia, *F. Muell.* 177
caulobotrya, Miq. . 165

Page

colossea, *F. Muell.* . 163
columnaris, C. Moore 169
coronulata, *F. Muell.* 172
Cunninghamii, *Miq.* 165
depressa, *Benth.* . . 172
dictyophleba, *F. Mu.* 170
ehretioides, *F. Muell.* 171
ellipsoidea, F. Muell. 164
eugenioides, *F. Mu.* 166
fasciculata, *F. Muell.* 177
Fitzalani, Miq. . . 163
Fraseri, F. Muell. . 165
glochidioides, F. Mu. 178
glomerata, *Willd.* . 178
Henneana, *Miq.* . . 165
hispida, *Linn. f.* . 176
Huegelii, Kunth et Bouch. 170
indecora, Miq. 175, 176
lachnocaula, Miq. . 169
lanata, F. Muell. . 168
Leichhardtii, Miq. . 170
leptoclada, *Benth.* . 172
leucotricha, *Miq.* . 167
macrophylla, *Desf.* . 170
magnifolia, *F. Muell.* 171
micracantha, Miq. . 175
mollior, *F. Muell.* . 173
Muelleri, *Miq.* . . 167
neglecta, Dene. . . 167
nesophila, *Miq.* . . 164
nitida, Thunb. . . 166
orbicularis, *Cunn.* . 175
opposita, *Miq.* . . 175
oppositifolia, Willd. 177
philippinensis, *Miq.* 173
pilosa, *Reinw.* . . 164
platypoda, *Cunn.* . 169
psychotriæfolia, Miq. 165
puberula, *Cunn.* . 169
pumila, *Linn.* . . 171
retusa, *Linn.* . . . 166
rubiginosa, *Desf.* . 168
salicina, F. Muell. . 172
scobina, *Benth.* . . 176
stenocarpa, *F. Muell.* 174
stipulata, Thunb. . 172
stipulosa, Miq. . . 163
validinervis, *F. Mu.* 166
vesca, F. Muell. . . 178
vitellina, Miq. . . 169
Fleurya photiniphylla, Kunth 192
Fluggea melanthesoides, F. Mu. 115
Freirea australis, Nees. . 188
Frenela 234

Page

arenosa, Cunn. . 238
attenuata, Cunn. . 238
australis, *Br.* . . 238
australis, Endl. . 238
calcarata, Cunn. . 238
canescens, Parlat. . 237
columellaris, F. Mu. 237
crassivalvis, Miq. . 237
Drummondii, *Parlat.* 236
Endlicheri, *Parlat.* . 238
fruticosa, Br. . . 239
fruticosa, Endl. . 238
fruticosa, Cunn. . 237
glauca, Mirb. . . 237
Gulielmi, Parlat. . 237
Gunnii, Endl. . . 239
intratropica, F. Mu. 237
Macleayana, *Parlat.* 235
macrostachya, Gord. 239
microcarpa, Cunn. . 237
Moorei, Parlat. . . 237
Muelleri, *Parlat.* . 237
Parlatorei, *F. Muell.* 235
propinqua, Cunn. . 237
pyramidalis, Cunn. . 238
rhomboidea, *Endl.* . 237
robusta, *Cunn.* . . 236
Roei, *Endl.* . . . 236
subcordata, Parlat. . 236
triquetra, Spach . 238
tuberculata, Mirb. . 237
variabilis, Carr . . 239
Ventenatii, Mirb. . 238
verrucosa, Cunn. . 237
Fusanus 215
acuminatus, *Br.* . . 215
crassifolius, *Br.* . . 217
diversifolius, Miq. . 216
persicarius, *F. Mu.* . 216
spicatus, *Br.* . . . 217

Galeola 306
cassythoides, *Rchb.f.* 307
foliata, *F. Muell.* . 307
Galera
nutans, Blume . . 308
Gastrodia 308
sesamoides, *Br.* . 309
Geoxoplesium
Baueri, Br. . . . 344
Genosiris
fragilis, Labill. . . 402
glabrata, F. Muell. . 407
juncea, F. Muell. . 405
lanata, F. Muell. . 406
longifolia, F. Muell. 406
Maxwelli, F. Muell. 405

Page

occidentalis, F. Mu. 403
pygmæa, F. Muell. 405
rudis, F. Muell. . 407
sericea, F. Muell. . 406
umbrosa, F. Muell. 404
xanthina, F. Muell. 404
Geodorum 298
dilatatum, *Br.* . . 299
pictum, *Lindl.* . . 299
Georchis
cordata, Lindl. . . 313
viridiflora, F. Mu. 313
Glochidion, Forst. . 96
Glossodia 391
Brunonis, *Endl.* . . 393
emarginata, *Lindl.* . 393
major, *Br.* . . . 392
minor, *Br.* . . . 392
Gonostegia, Turcz . . 186
Gonyanthes
pusilla, Miers . . 398
Goodyera 312
polygonoides, *F. Mu.* 313
viridiflora, *Blume* . 313
Gunnia
australis, Lindl. . 294
picta, Lindl. . . . 294
Gymnanthes, Sw. . . 151
Gymnococca
drupacea, Fisch. et Mey. 22

Habenaria. 393
arnhemica, F. Muell. 395
elongata, *Br.* . . . 394
graminea, *Lindl.* . 394
ochroleuca, *Br.* . . 395
propinquior, Reichb. 395
trinervis, *Wight* . . 394
xanthantha, *F. Mu.* 395
Hæmodorum . . . 418
brevicaule, *F. Muell.* 419
brevisepalum, *Benth.* 420
coccineum, *Br.* . . 422
distichophyllum, *Hk.* 419
edule, Endl. . . . 420
ensifolium, *F. Mu.* . 423
laxum, *Br.* . . . 421
leptostachyum, *Bth.* 423
paniculatum, *Lindl.* 420
parviflorum, *Benth.* 423
planifolium, *Br.* . . 422
polycephalum, Endl. 421
simplex, *Lindl.* . . 421
simulans, *F. Muell.* 421
sparsiflorum, *F. Mu.* 420
spicatum, *Br.* . . . 420
strictum, Endl. . . 420

Page

subvirens, *F. Muell.* 423
tenuifolium, *A. Cunn.* 423
teretifolium, *Br.* . 422
Hellenia
arctiflora, F. Muell. 266
cærulea, Br. . . . 266
Helmia
bulbifera, Kunth. . 462
Hemicyclia 117
australasica, *M. Arg.* 118
lasiogyna, *F. Muell.* 118
sepiaria, *W. et Arn.* 117
sepiaria, *var.* F. Mu. 118
Hemistemma
Leschenaultii, DC. . 65
Heterolæna
decussata, C. A. Mey. 11
Hendersoni, C. A. Mey. 10
hispida, C. A. Mey. 10
incana, C. A. Mey. 20
nivea, C. A. Mey. . 20
rosea, C. A. Mey. . 10
spectabilis, Fisch et Mey. 9
Hippocrepandra
ericoides, Mu. Arg. 81
gracilis, Muell. Arg. 81
lurida, Muell. Arg. 80
Neesiana, Mu. Arg. 81
Hydrilla 259
ovalifolia, Rich. . . 260
verticillata, *Casp.* . 259
Hydrocharideæ . . 255
Hydrocharis 256
morsus-ranæ, *Linn.* 256
Hylococcus
sericeus, R. Br. . . 92
Hypoxis 449
glabella, *Br.* . . . 450
hygrometrica, *Labill.* 449
leptantha, *Benth.* . 451
marginata, *Br.* . . 451
occidentalis, *Benth* . 451
pratensis, Br. . . 450
pusilla, *Hook. f.* . 450
vaginata, Schlecht. 450
Hyrtanandra
lythroides, F. Muell. 187

Irideæ 398
Iris
Robinsoniana, F. Mu. 409

Jatropha
moluccana, Linn. . 129

Kelleria, Endl. . . . 35

Page
Kirganelia, A. Juss. . 93

Laportea 191
gigas, *Wedd.* . . . 191
moroides, *Wedd.* . 192
photiniphylla, *Wedd.* 192
Vitiensis, Seem. . . 192
Lebediera
Cunninghamii, Mu. Arg. 122
Ledgeria
aphylla, F. Muell. . 307
foliata, F. Muell. . 308
Leichhardtia
Macleyana, Sheph. . 236
Leopardanthus, Blume. 300
Lepidozamia
Perowskiana, Reg. . 253
Leptoceras
fimbriata, Lindl. . 379
macrophylla, Lindl. 379
Menziesii, Lindl. . 379
oblongâ, Lindl. . . 379
pectinata, Lindl. . 379
pectinata, Endl. . 374
sulphurea, Lindl. . 386
Leptomeria 219
acerba, Br. . . . 225
acerba, Sieb. . . 229
acida, *Br.* . . . 222
aphylla, *Br.* . . . 222
aphylla, A. DC. . . 221
aphylla, Sieb. . . 219
axillaris, *Br.* . . 224
Billardieri, *Br.* . . 222
Billardieri, Sieb. . 219
Brownii, Miq. . . 223
chrysadena, Miq. . 222
Cunninghamii, *Miq.* 223
empetriformis, *Miq.* 224
ericoides, Miq. . . 222
glomerata, *F. Muell.* 223
hirtella, Miq. . . 224
laxa, *Miq.* . . . 224
Lehmanni, Miq. . . 221
obovata, *Miq.* . . 224
odorata, Miq. . . 228
pauciflora, *Br.* . . 221
Preissiana, *A. DC.* . 221
pungens, F. Muell. . 223
scrobiculata, *Br.* . 221
spinosa, *A. DC.* . 220
squarrulosa, *Br.* . 223
xiphoclada, Sieb. . 84
Leptonema
melanthesoides, F. Muell. 115
Leucosmia, Benth. . 37

Page
Libertia 412
graminea, Endl. . 411
Laurencii, Hook. f. 414
laxa, Endl. . . . 411
micrantha, Cunn. . 414
paniculata, *Spreng.* 413
pulchella, *Spreng.* . 413
stricta, Endl. . . 411
Liparis 272
cœlogynoides, *F. M.* 273
cuneilabris, *F. Mu.* 273
habenarina, *F. Muell.* 273
reflexa, *Lindl.* . . 272
Lithoxylon
grandifolium, Muell. Arg. 89
Lyperanthus . . . 373
Burnettii, F. Muell. 375
ellipticus, *Br.* . . 374
nigricans, *Br.* . . 374
serratus, Lindl. . . 386
suaveolens, Br. . . 386

Macaranga 144
asterolasia, F. Mu. 146
Dallachyi, *F. Muell.* 144
inamœna, *F. Muell.* 145
involucrata, *Baill.* . 146
mallotoides, F. Mu. 143, 146
Tanarius, *Mu. Arg.* 146
subdentata, *Benth.* . 145
Macdonaldia
antennifera, Lindl . 322
concolor, Lindl. . . 322
cyanea, Lindl. . . 323
Smithiana, Gunn. . 322
spiralis, Lindl. . . 323
variegata, Lindl. . 323
venosa, Lindl. . . 323
Maclura
javanica, Miq. . . 179
Macropiper
excelsum, Miq. . . 204
Macropodia 446
fumosa, *Drumm.* . 447
Macrostegia
crubescens, Turcz. . 15
Macrozamia 250
corallipes, Hook. f. . 252
cylindrica, Hort. . 252
Denisoni, F. Muell. 253
Fraseri, *Mey.* . . 252
Macdonelli, F. Mu. 253
Mackenzii, Hort. . 253
Macleayi, Hort. . 252
Miquelii, F. *Muell.* 253
Oldfieldii, Miq. . . 252

Page
Paulo-Gulielmi, *F. M.* 251
Perowskiana, *Miq.* . 253
Preissii, Lehm. . . 252
spiralis, *Miq.* . . 251
tenuifolia, Hort. . 251
Malaisia 180
acuminata, Planch. 181
Cunninghamii, Plan. 181
scandens, Planch. . 181
tortuosa, *Blanco.* . 180
viridescens, Planch.. 181
Malaxis
iridifolia, Reichb. . 274
palmicola, F. Muell. 275
subulata, Labill. . 333
Mallotus 138
angustifolius, *Benth.* 141
chinensis, Lour. . 140
claoxyloides, *M. Ar.* 140
Dalachyi, F. Muell. 145
discolor, *F. Muell.* 143
inamœnus, F. Mu. 146
nesophilus, *F. Mu.* 143
paniculatus, *M. Ar.* 140
philippinensis, *M. A.* 141
polyadenus, *F. Mu.* 142
pycnostachys, F. Mu. 140
repandus, *Mu. Arg.* 142
ricinoides, *Mu. Arg.* 139
Zippellii, F. Muell. 140
Mappa
tanaria, Spreng. . 146
Melanthesa
cernua, Dene. . . 113
Melanthesopsis, M. Ar. 113
Memorialis
lythroides, F. Muell. 187
quinquenervis, Ham. 187
Mercurialis
angustifolia, Baill.. 130
australis, Baill. . 130
tenerifolia, Baill. . 130
Micrantheum . . . 57
boroniaceum, F. Mu. 57
ericoides, *Desf.* . . 57
hexandrum, *Hook. f.* 57
triandrum, Hook. . 104
Microcachrys . . . 240
tetragona, *Hook. f.* . 241
Microstachys, A. Juss. 151
Microtis 346
alba, *Br.* 348
arenaria, Lindl . . 347
atrata, *Lindl.* . . 349
Banksii, Cunn. . . 347
Benthamiana, Reichb. 348
Brownii, Reichb. . 348
frutetorum, Schlect. 347

	Page
media, *Br.* . . .	348
minutiflora, F. Mu.	349
parviflora, *Br.* . .	347
porrifolia, *Spreng.* .	347
pulchella, *Br.* . .	349
pulchella, Lindl. .	347
rara, Br.	347
unifolia, Reichb. .	347
viridis, F. Muell. .	347
MONOCOTYLEDONES . .	255
Monotaxis	78
bracteata, Nees . .	81
cuneifolia, Klotzsch	80
ericoides, Kl. . .	81
gracilis, *Baill.* . .	80
grandiflora, *Endl.* .	81
linifolia, *Brongn.* .	79
lurida, *Benth.* . .	80
macrophylla, *Benth.*	79
megacarpa, *F. Muell.*	80
Neesiana, Baill. . .	81
occidentalis, *Endl.* .	79
Oldfieldii, Baill. .	80
porantheroides, F. M.	80
tridentata, Endl. .	79
Morœa	409
diandra, Vahl . .	400
Robinsoniana, *F. Mu.*	409
Morus	
Brunoniana, Endl. .	181
calcar-galli, Cunn. .	179
pendulina, Bauer .	181
Musa	261
Banksii, *F. Muell.* .	261
Nematostigma	
paniculatum, Dietr.	413
pulchellum, Dietr. .	414
Neorœpera	116
Banksii, *Benth.* . .	117
buxifolia, *Mu. Arg.*	116
Neottia	
australis, Br. . .	314
viridiflora, Blume .	313
NEPENTHACEÆ	40
Nepenthes	40
Kennedyi, *F. Muell.*	40
Niemeyera	
stylidioides, F. Muell.	396
Oberonia	274
crassiuscula, F. Mu.	290
iridifolia, *Lindl.* . .	274
palmicola, *F. Muell.*	274
Octoclinis	
Backhousii, Hill .	238
Macleyana, F. Mu.	235
Omalanthus	
populifolius, Grah. .	150
stillingiæfolius, F. M.	151
Omphacomeria . . .	225
acerba, *A. DC.* . .	225
psilotoides, *A. DC.* .	225
ORCHIDEÆ	267
Orthoceras	332
Solandri, Lindl. .	332
strictum, *Br.* . .	332
Orthrosanthus . . .	410
gramineus, *Benth.* .	411
laxus, *Benth.* . .	411
Muelleri, *Benth.* .	411
multiflorus, *Sweet* .	410
polystachyus, *Benth.*	411
Ottelia	256
alismoides, *Pers.* .	257
ovalifolia, *Rich.* . .	257
tenera, *Benth.* . .	257
Pancratium	
amboinense, Linn. .	456
australasicum, Ker.	456
Parietaria	187
debilis, *Forst.* . .	188
oppositifolia, F. Mu.	187
squalida, Hook. f. .	188
Passerina	
involucrata, Thunb.	18
Patersonia	400
babianoides, *Benth.* .	408
bicolor, F. Muell. .	403
compar, Endl. . .	403
Diesingii, Endl. . .	403
Drummondii, *F. Mu.*	407
flaccida, Endl. . .	403
glabrata, *Br.* . . .	407
glabrata, Edw. . .	406
glauca, Br. . . .	402
graminea, *Benth.* .	408
inæqualis, *Benth.* .	408
juncea, *Lindl.* . .	404
lanata, *Br.* . . .	406
limbata, *Endl.* . .	404
longifolia, *Br.* . .	406
longiscapa, *Sweet* .	402
macrantha, *Benth.* .	407
Maxwelli, *F. Muell.*	405
media, Br. . . .	407
montana, Endl. . .	403
nana, Endl. . . .	403
occidentalis, *Br.* .	403
pannosa, Endl. . .	406
pygmæa, *Lindl.* . .	405
Roei, Endl. . . .	405
rudis, *Endl.* . . .	407
sapphirina, Lindl. .	403
sericea, *Br.* . . .	406
sylvestris, Endl. . .	403
tenuispatha, Endl. .	403
turfosa, Endl. . .	403
umbrosa, *Endl.* . .	404
xanthina, *F. Muell.*	404
Peperomia	205
Baueriana, Cas. DC.	206
leptostachya, *Hook. et Arn.*	206
reflexa, *Dietr.* . .	206
Petalostigma . . .	92
australianum, Baill.	92
quadriloculare, *F. M.*	92
triloculare, Mu. Arg.	92
Petermannia	462
cirrosa, *F. Muell.* .	462
Phaius	304
australis, F. Muell .	305
Bernaysii, *Rowl.* . .	305
Carroni, F Muell. .	305
grandifolius, *Lour.* .	304
leucophæus, F. Muell.	305
Phaleria	37
Blumei, *Benth.* . .	38
clerodendron, *F. Mu.*	38
laurifolia, Dene . .	38
Neumanni, *F. Muell.*	38
Pherosphæra	245
Hookeriana, *Arch.* .	245
Phlebocarya	424
ciliata, *Br.* . . .	424
filifolia, *F. Muell.* .	425
lævis, Lindl. . . .	425
pilosissima, *F. Muell.*	425
Pholidota	290
imbricata, *Lindl.* .	290
Phreatia	289
limenophylax, *Reich.*	290
Phyllanthus	93
Adami, *Muell. Arg.*	97
albiflorus, *F. Muell.*	100
aridus, *Benth.* . .	110
Armstrongii, *Benth.*	112
australis, *Hook. f.* .	108
baccatus, *F. Muell.*	102
Banksii, Cunn. . .	117
Beckleri, Muell. Arg.	111
bossiæoides, Cunn. .	98
brachypodus, F. Mu.	103
calycinus, *Labill.* .	105
Carpentariæ, *M. Arg.*	107
conterminus, M. Arg.	111
crassifolius, *Mu. Arg.*	100
cygnorum, Endl. .	105
Dallachyanus, *Benth.*	104
ditassoides, *Mu. Arg.*	97
echinatus, Cunn. .	103

Page

elachophyllus, *F. M.* 101
Ferdinandi, *Mu. Arg.* 96
filicaulis, *Benth.* . 111
flagellaris, *Benth.* . 106
Fuernrobrii, *F. Mu.* 107
Gasstrœmii, *M. Arg.* 104
gracillimus, F. Mu. 112
grandisepalus, F. M. 106
Gunnii, *Hook. f.* . 110
hebecarpus, *Benth.* 108
hirtellus, *Muell. Arg.* 98
hirtellus, F. Muell. . 109
indigoferoides, *Benth.* 110
indigoferoides, Cunn. 104
lacunarius, *F. Muell.* 108
ledifolius, Cunn. . 109
lobocarpus, *Benth.* . 97
maderaspatanus, *L.* 103
microcladus, *M. Arg.* 106
minutiflorus, *F. Mu.* 112
Mitchelli, *Benth.* . 103
Novæ-Hollandiæ, *M. Arg.* 101
Novæ-Hollandiæ, Ba. 102
ochrophyllus, *Benth.* 99
pimeleoides, A. DC. 105
Preissianus, Kl. . . 105
pulchellus, Endl. . 105
ramosissimus, *M. Arg.* 99
reticulatus, *Poir.* . 101
rhytidospermus, *F. M.* 100
rigens, *Muell. Arg.* 99
rigidulus, *F. Muell.* 99
saxosus, F. Muell. . 111
scaber, *Kl.* 109
similis, *Muell. Arg.* 106
simplex, *Retz* . . 111
stenocladus, Mu. Arg. 98
subcrenulatus, *F. M.* 104
thesioides, *Benth.* . 98
thymoides, *Sieb.* . 109
trachygyne, *Benth.* . 103
trachyspermus, *F. M.* 108
triandrus, Mu. Arg. 104
uberiflorus, Baill. . 101
Urinaria, *Linn.* . . 102
Phyllocladus 245
asplenifolius, Hk. f. 246
Billardieri, Mirb. . 246
rhomboidalis, *Rich.* 246
Pimelea 1
æruginosa, F. Muell. 12
alpina, *F. Muell.* . 7
altior, *F. Muell.* . 32
ammocharis, *F. Mu.* 30
angustifolia, *Br.* . 13
argentea, *Br.* . . 25
axiflora, *F. Muell.* . 26

Page

Behrii, Schlecht. . 33
Bowmanni, *F. Mu.* . 30
brachyphylla, *Benth.* 11
brevifolia, *Br.* . . 12
brevifolia, Meissn. . 11
campicola, A. Cunn. 16
cernua, Br. . . . 17
cinerea, *Br.* . . . 8
clavata, *Labill.* . . 25
cluytioides, Meissn. . 29
collina, *Br.* . . . 16
collina, Cunn. . . 18
colorans, *Cunn.* . . 16
colorans, Mitch. . . 17
concreta, *F. Muell.* . 6
congesta, A. Cunn. . 31
congesta, R. Cunn. . 32
congesta, F. Muell. . 8
cornucopiæ, *Vahl* . 6
crinita, Lindl. . . 21
Cunninghamii, Meiss. 17
curviflora, *Br.* . . 31
decussata, Br. . . 11
dichotoma, Schlecht. 29
diosmifolia, A. Cunn. 29
diosmifolia, Lodd. . 11
distinctissima, F. M. 27
drupacea, *Labill.* . 21
elachantha, *F. Muell.* 28
elata, F. Muell. . . 18
elegans, Moore . . 19
Eyrei, *F. Muell.* . 34
ferruginea, *Labill.* . 10
filamentosa, Rudge . 18
filiformis, *Hook. f.* . 23
flava, *Br.* 29
floribunda, *Meissn.* . 14
glauca, *Br.* . . . 15
graciliflora, Hook. . 12
gracilis, Br. . . . 31
grandiflora, Don . 5
Gunnii, Hook. f. . 8
hæmatostachya, *F. M.* 22
Hendersoni, Grah. . 10
Hewardiana, Meiss. 28
hirsuta, *Meissn.* . . 32
hispida, *Br.* . . . 10
Holroydi, *F. Muell.* 35
humilis, *Br.* . . . 19
humilis, Lindl. . . 16
hypericina, A. Cunn. 19
imbricata, *Br.* . . 20
incana, Br. . . . 20
intermedia, Lindl. . 16
involucrata, Banks . 18
lanata, Br. . . . 10
lanata, Hensl. . . 19
latifolia, *Br.* . . . 23

Page

Lehmanniana, *Meiss.* 9
leptospermoides, *F. M.* 27
leptostachya, *Benth.* 24
ligustrina, *Labill.* . 18
Lindleyana, Meiss. 17, 18
linifolia, *Sm.* . . . 17
linoides, Cunn. . . 18
longiflora, *Br.* . . 34
longifolia, *Banks* . 7
macrocephala, Hook. 15
marginata, Meissn. . 16
Maxwelli, *F. Muell.* 12
Menkeana, Lehm. . 15
micrantha, F. Muell. 32
microcephala, *Br.* . 27
microcephala, Meiss. 21
Milligani, *Meissn.* . 8
Mitchelli, Meissn. . 17
modesta, Meissn. . 12
Muelleri, Meissn. . 31
myriantha, Meissn. 25
myrtifolia, Schlecht. 16
nana, Grah. . . . 21
nervosa, *Meissn.* . 13
Neypergiana, Hort. 35
nivea, *Labill.* . . 20
nutans, Meissn. . . 17
octophylla, *Br.* . . 32
ovalifolia, Meissn. . 32
paludosa, Br. . . 18
parvifolia, Meissn. . 29
pauciflora, *Br.* . . 27
petræa, *Meissn.* . . 33
petrophila, *F. Muell.* 30
phylicoides, *Meissn.* 33
physodes, *Hook.* . . 15
pilibunda, Cunn. . 21
Preissii, *Meissn.* . 35
Preissii, Schlecht. . 16
prinifolia, Nois. . 5
propinqua, A. Cunn. 31
punicea, *Br.* . . . 6
pygmæa, *F. Muell.* 28
rigida, Meissn. . . 18
rosea, *Br.* 10
sanguinea, *F. Muell.* 7
Schlechtendahliana, Meissn. 16
sericea, *Br.* . . . 19
sericostachya, *F. Mu.* 24
serpyllifolia, *Br.* . 29
Shuttleworthiana, Meissn. 25
simplex, *F. Muell.* . 23
spathulata, *Labill.* . 17
spectabilis, *Lindl.* . 9
spicata, *Br.* . . . 22
spiculigera, F. Mu. 23

	Page
stricta, *Meissn.* . .	34
suaveolens, *Meissn.* .	14
sulphurea, *Meissn.* .	14
sylvestris, *Br.* . .	11
thymifolia, Presl. .	31
tinctoria, Meissn. .	15
trichostachya, *Lindl.*	24
umbratica, A. Cunn.	22
Verschaffeltii, Meis.	9
vestita, Meissn. . .	25
villifera, *Meissn.* .	21
villifera, A. Cunn. .	32
villosa, Meissn. . .	34
viridula, Lindb. .	26
viminea, Schlecht. .	33
Piper	203
australasicum, Cas. DC.	205
Banksii, *Miq.* . .	205
excelsum, *Forst.* .	204
hederaceum, *Cunn.* .	205
Novæ-Hollandiæ, *Miq.*	204
paramattense, Cas. DC.	205
subpeltatum, *Willd.*	204
triandrum, *F. Muel.*	205
PIPERACEÆ	203
Pipturus	185
argenteus, *Wedd.* .	185
propinquus, Wedd.	185
Plagianthera *affinis*, Baill. . . .	141
Plexaure *limenophylax*, Endl.	290
Podanthera *pallida*, Wight . .	308
Podocarpus	246
alpina, *Br.* . . .	248
asplenifolia, Labill.	246
Drouyniana, *F. Mu.*	247
elata, *Br.*	247
ensifolia, Br. . . .	247
falcata, Cunn. . .	247
Lawrencii, Hook. f.	248
pungens, Caley . .	247
spinulosa, *Br.* . .	247
Pogonia	309
Dallachyana, *F. Mu.*	310
holochila, *F. Muell.*	310
uniflora, *F. Muell.*	310
Poranthera	54
arbuscula, Sieb. . .	56
arbuscula, Sond. .	55
cicatricosa, F. Muel.	55
corymbosa, *Brongn.*	56
Drummondii, Kl. .	56
ericifolia, *Rudge*. .	55

	Page
ericifolia, Hueg. .	56
ericoides, *Kl.* . .	55
glauca, Kl. . . .	55
Huegelii, *Kl.* . .	55
linarioides, Sieb. .	56
microphylla, *Brong.*	56
piccoides, Kl. . .	55
Potomorphe *subpeltata*, Miq. . .	204
Pouzolsia	186
arnhemica, F. Muell.	186
indica, *Gaudich.* .	186
lythroides, F. Muell.	187
quinquenervis, *Benn.*	187
Prasophyllum . . .	335
affine, Lindl. . . .	340
alpinum, Br. . .	340
Archerii, *Hook. f.* .	345
australe, *Br.* . .	337
australe, Lindl. . .	338
brachystachyum, *Lnd.*	344
brevilabre, *Hook. f.*	338
Brownii, Reichb. .	338
cucullatum, *Benth.* .	343
cyphochilum, *Benth.*	340
despectans, *Hook. f.*	345
Drummondii, Reich.	338
elatum, *Br.* . . .	337
Fimbria, *Reichb.* .	341
fimbriatum, *Br.* .	345
flavum, *Br.* . . .	337
fuscum, *Br.* . . .	339
gibbosum, *Br.* . .	342
giganteum, Lindl. .	338
giganteum, Endl. .	342
gracile, Lindl. . .	341
hians, *Reichb.* . .	338
intricatum, *C. Stuart*	346
lutescens, Lindl. .	337
macrostachyum, *Br.*	341
macrotis, Lindl. . .	348
nigricans, *Br.* . .	343
nigricans, Endl. .	341
nudiscapum, *Hook. f.*	345
nudum, Hook. f. .	344
ovale, *Lindl.* . .	341
parvifolium, *Lindl.*	342
patens, *Br.* . . .	339
rostratum, Lindl. .	340
rufum, *Br.* . . .	344
striatum, *Br.* . .	342
truncatum, Lindl. .	339
Woollsii, *F. Muell.* .	346
Pseudanthus	58
chryseus, Muell. Arg.	62
divaricatissimus, *Benth.*	60
micranthus, *Benth.*	59

	Page
nematophorus, *F. Mu.*	61
nitidus, Muel. Arg. .	61
occidentalis, F. Muel.	61
orientalis, *F. Muell.*	60
ovalifolius, *F. Muell.*	59
pimeleoides, *Sieb.* . .	59
polyandrus, F. Muell.	62
virgatus, *Muell. Arg.*	60
Pseudomorus . . .	181
Brunoniana, *Bur.* .	181
Pterostylis	352
acuminata, *Br.* . .	355
acuminata, Sieb. .	355
alata, Reichb. . .	359
aphylla, *Lindl.* . .	361
barbata, Endl. . .	357
barbata, *Lindl.* . .	362
concinna, *Br.* . .	355
cucullata, *Br.* . .	357
curta, *Br.* . . .	355
Daintreana, *F. Muel.*	360
dubia, Br. . . .	358
dubia, Hook. . .	358
furcata, *Lindl.* . .	358
gibbosa, Br. . . .	363
grandiflora, *Br.* . .	358
longifolia, *Br.* . .	364
Mitchelli, Lindl. .	364
mutica, *Br.* . . .	362
nana, *Br.*	357
nutans, *Br.* . . .	356
obtusa, *Br.* . . .	360
ophioglossa, *Br.* .	354
parviflora, *Br.* . .	361
pedunculata, *Br.* .	356
præcocissima, F. Mu.	365
præcox, *Lindl.* . .	359
pyramidalis, *Lindl.*	357
pyramidalis, Endl. .	359
recurva, *Benth.* . .	360
reflexa, *Br.* . . .	359
revoluta, Br. . . .	359
rufa, *Br.*	363
scabra, Lindl. . .	359
scabrida, Lindl. . .	358
squamata, Br. . .	364
squamata, Lindl. .	362
turfosa, *Endl.* . .	362
vittata, *Lindl.* . .	364
Ramphidia	312
tenuis, *Lindl.* . .	312
Reidia, Wight . . .	93
Rencalmia *paniculata*, Br. . .	413
pulchella, Br. . .	414
Ricinocarpus . . .	68
Bowmanni, *F. Muell.*	72

Page
cyanescens, *Muell. Arg.* 70
glaucus, *Endl.* . . 71
ledifolius, *F. Muell.* 72
major, *Muell. Arg.* . 72
marginatus, *Benth.* 73
Mitchelli, Sond. . . 76
muricatus, *Muell. Arg.* 73
pinifolius, *Desf.* . . 70
psilocladus, *Benth.* . 71
rosmarinifolius, *Benth.* 72
puberulus, Baill . . 72
sidæformis, F. Muell. 70
speciosus, *Muell. Arg.* 73
tasmanicus, Sond. . 76
trichophorus, *Muell. Arg.* 73
tuberculatus, *Muell. Arg.* 70
undulatus, Lehm. . 71
Ricinus
Tanarius, Linn. . . 146
Rœpera
buxifolia, F. Muell. 117
Rœperia
pinifolia, Spreng. . 70
Rottlera
discolor, F. Muell. . 143
tinctoria, Roxb. . . 141

Saccolabium 298
calcaratum, F. Mu. 296
Hillii, *F. Muell.* . 298
Macphersonii, F.Mu. 297
SANTALACEÆ . . . 211
Santalum 213
acuminatum, A.DC. 216
angustifolium, A.DC. 216
cognatum, Miq. . . 216
crassifolium, A. DC. 217
cygnorum, Miq. . . 217
diversifolium, A. DC. 216
lanceolatum, *Br.* . 214
oblongatum, Br. . 214
obtusifolium, *Br.* . 215
ovatum, *Br.* 214
persicarium, F. Mu. 216
Preissianum, Miq. . 216
spicatum, A. DC. . 217
venosum, Br. . . 214
Sarcochilus 291
australis, Reichb. . 294
Baileyi, F. Muell. . 291
Barklyanus, F. Mu. 294
calcaratus, F. Muell. 296
Ceciliæ, *F. Muell.* . 294
dilatatus, F. Muell. 294
divitiflorus, *F. Muell.* 292

Page
falcatus, *Br.* . . . 293
Fitzgeraldi, *F. Muell.* 293
Gunnii, F. Muell. . 294
Hillii, *F. Muell.* . 295
olivaceus, *Lindl.* . 293
parviflorus, *Lindl.* . 294
pictus, Reichb. . . 294
phyllorhizus, *F. Mu.* 295
tridentatus, Reich. f. 296
Schwœgrichenia
flavida, Spreng. . . 444
rufa, Spreng. . . 443
SCITAMINEÆ 260
Sebastiania 151
chamelæa, *Muel. Arg.* 151
Securinega 115
leucopyra, *Mu. Arg.* 116
Muelleriana, Baill. . 117
obovata, *Muell. Arg.* 115
virosa, Baill. . . 116
Serpicula
verticillata, Linn. f. 260
Sisyrinchium . . . 412
bermudiana, *Linn.* . 412
cyaneum, Lindl. . 410
micranthum, *Cav.* . 412
paniculatum, Br. . 413
pulchellum, Br. . . 414
Solenostigma
brevinerve, Blume . 156
paniculatum, Endl. 156
Spathoglottis . . . 304
Paulinæ, *F. Muell.* . 304
Spiculæa
ciliata, Lindl. . . 368
Spiranthes 313
australis, *Lindl.* . 314
Sponia
amboinensis, Planch. 159
aspera, Planch. . . 158
ilicifolia, S. Kurz. . 160
orientalis, Planch. . 159
velutina, Planch. . 159
virgata, Planch. . 158
viridis, Planch. . . 158
Stachystemon . . . 61
brachyphyllus, *Muell. Arg.* 62
polyandrus, *Benth.* . 62
vermicularis, *Planch.* 62
Stratiotes
alismoides, Linn. . 257
Streblus
Brunoniana, F. Mu. 181
pendulina, F. Muell. 181
Sturmia
cœlogynoides, F. Mu. 273
cuneilabris, F. Muell. 273

Page
habenaria, F. Muell. 274
reflexa, F. Muell. . 273
Synostemon
glaucus, F. Muell. . 98
hirtellus, F. Muell. . 98
ramosissimus, F. Mu. 100
rigens, F. Muell. . 99

Tacca 458
Brownii, Seem. . . 459
maculata, Seem. . 459
pinnatifida, *Forst.* . 458
TACCACEÆ 458
Tæniophyllum . . . 291
Muelleri, *Lindl.* . 291
Tapeinocheilos . . . 267
pungens, *Miq.* . . 267
Taxotrophis
rectinervis, F. Muell. 160
Taxus
spinulosa, Sm. . . 247
Thalamia
asplenifolia, Spreng. 246
Thecanthes
cornucopiæ, Wikstr. 6
punicea, Wikstr. . . 6
Thelymitra 316
angustifolia, Br. . 320
angustifolia, Hook. f. 319
antennifera, *Hook. f.* 322
arenaria, Lindl. . . 320
aristata, *Lindl.* . . 319
Benthamiana, Reich. 321
campanulata, Endl. 319
campanulata, Lindl. 318
canaliculata, *Br.* . 318
carnea, *Br.* . . . 321
cornicina, Reichb. . 318
crinita, *Lindl.* . . 319
cyanea, *Lindl.* . . 323
epipactoides, F. Mu. 318
flexuosa, *Endl.* . . 322
Forsteri, Sw. . . 320
fuscolutea, *Br.* . . 321
graminea, Lindl. . 320
grandis, F. Muell. . 319
iridioides, Sieb. . . 318
ixioides, *Sw.* . . . 317
juncifolia, Lindl. . 318
lilacina, F. Muell. . 318
longifolia, *Forst.* . 319
Macmillani, *F. Mu.* 323
macrophylla, Lindl. 319
media, Br. . . . 318
nuda, Br. . . . 320
ovata, F. Muell. . 319
pardalina, F. Muell. 320
pauciflora, Br. . . 320

Page

porphyrosticta, F.M. 323
Smithiana, Hook. f. 322
stellata, *Lindl.* . . 321
tigrina, *Br.* . . . 320
variegata, *Lindl.* . 323
venosa, *Br.* . . . 323
venosa, Hook. f. . . 323
versicolor, Lindl. . 320
villosa, *Lindl.* . . 320
Thesium 212
australe, *Br.* . . . 212
chinense, Turcz. . . 213
decurrens, Bl. . . 213
drupaceum, Labill. . 222
Thrixspermum
australe, Reichb. . 294
Cæciliæ, Reichb. . . 295
dilatatum, Reichb. . 294
falcatum, Reichb. . 293
Hillii, Reichb. . . 295
olivaceum, Reichb. . 294
phyllorhizum, Reichb. 295
parviflorum, Reichb. 294
pictum, Reichb. . . 294
Thuja
australis, Poir. . . 238
THYMELEÆ 1
Trachycaryon
Billardieri, Kl. . . 135
Cunninghamii, F.Mu. 134
Hookerii, F. Muell. 135
Klotzschii, F. Muell. 135
Tragia 137
Novæ-Hollandiæ, *Mu. Arg.* 138
chamelæa, Linn. . . 152
Trema 157
amboinensis, *Bl.* . . 159
aspera, *Bl.* . . . 158
orientalis, *Bl.* . . 158
virgata, Bl. . . . 158
velutina, Bl. . . . 159

Page

viridis, Bl. . . . 158
Tribonanthes . . . 426
australis, *Endl.* . . 427
brachypetala, *Lindl.* 426
Lindleyana, Endl. . 428
longipetala, *Lindl.* . 427
odora, Endl. . . . 426
uniflora, *Lindl.* . . 427
variabilis, *Lindl.* . 427
violacea, Endl. . . 427

Udora
australis, F.Muell. 260
Urera
excelsa, Wedd. . . 192
rotundifolia, Wedd. 192
Urostigma
benjamineum, Miq. 167
brachypodum, Miq. . 167
Cunninghamii, Miq. 165
eugenioides, Miq. . 167
Fraseri, Miq. . . 165
Huegelii, Miq . . 170
lachnocaulon, Miq.. 169
Leichhardtii, Miq. . 170
leucotrichum, Miq. . 168
macrophyllum, Miq. 170
Muelleri, Miq. . . 167
nesophilum, Miq. . 165
nitidum, Miq. . . 166
oroideum, Miq. . . 166
pilosum, Miq. . . 164
pisiferum, Miq. . . 166
platypodum, Miq. . 169
psychotriæfolium, Miq. 165
puberulum, Miq. . 169
retusum, Miq. . . 166
rubiginosum, Gasp. 168
squamellosum, Miq.. 170
stipulosum, Miq. . 163
subglaucinum, Miq. 163

Page

vitellinum, Miq.. . 169
Urtica 190
argentea, Forst. . . 185
dioica, Linn. . 190, 191
gigas, Cunn. . . . 192
incisa, *Poir.* . . . 190
involucrata, Roxb. . 146
lucifuga, Hook. f. . 190
moroides, Cunn. . . 192
photiniphylla, Cunn. 192
pusilla, Poir. . . . 189
tasmanica, F. Muell. 189
urens, *Linn.* . . . 191
URTICEÆ 153

Vallisneria 258
nana, Br. . . . 259
octandra. Roxb. . 258
spiralis, *Linn.* . . 259
Vanda 297
Hindsii, *Lindl.* . . 297
suavis, F. Muell. . 297
tricolor, Lindl. . . 297

Wailesia, Lindl. . . 300
Wartmannia
stillingiæfolia, M.Ar. 151
Wikstrœmia 36
fœtida, A. Gray . . 37
indica, *C. A. Mey.* . 37
Shuttleworthiana, Meissn. 37
viridiflora, Meissn. . 37
Wuerthia
elegans, Regel. . . 411

Xylophylla
obovata, Willd. . . 115

Zamia
spiralis, Br. . 251, 252

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